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# THE PHYSIOLOGY OF PUPILLARY MOVEMENTS.

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The works devoted to the normal pupil and its troubles are innumerable. Nevertheless, or rather because of their number, there are few subjects more confused or worse understood. When we read the articles in the journals and the chapters in the text-books where the reflexes of the pupil and its symptomatology are discussed, we cannot fail to be struck by the diversity and the insufficiency of most of the pathogenic interpretations, which differ among themselves, and are at variance with the laws of physiology and general pathology.

The causes of this obscurity are many. In addition to our lack of knowledge of the anatomy and physiology of the iridomotor nervous system, because of the very great difficulties in the way of experimentation, it is necessary to cite the rarity of available material in the clinics, due to the insufficient ophthalmic knowledge of most authors, to the lack of precise method in their observations, and to the absence of complete necropsies. All these sources of error explain the number of pathogenic theories which encumber the literature, to the detriment of exact facts furnished by experiments and clinical observations. Therefore, in studying the physiology of pupillary movements, we have laid aside all of these hypotheses, and have confined ourselves strictly to an analysis of definite facts. We have been led to announce certain results which seemed to us worthy of being published, because they have developed logically and are in many ways in opposition to the theories generally accepted, especially by the clinicians.

The normal movements of the pupil are those of dilatation and contraction.

The contraction is due to the contraction of the sphincter, an annular, non-striated muscle, situated in the stroma iridis. This is an indisputable fact.

On the other hand, the mechanism of dilatation is one of the most discussed problems of physiology. We are all agreed as to the necessity of a dilatating mechanism, an antagonist of the sphincter. The differences appear when we attempt to define the nature of this apparatus. Is the dilatation due to an active contraction or a passive retraction, or, in other words, is there a dilator muscle? When we study the iridal movements, this is the first question with which we come in contact, and we cannot progress without having solved it.

It has been proven that no non-striated muscle is present in the iris, analogous to the sphincter, whose contraction would cause pupillary dilatation. Nevertheless, some anatomists have continued to search patiently for this muscle. Some have assigned a contractile role to different elements of the stroma, especially to the stellate cells (K. Muench). Most of these advocates of a dilatator muscle have admitted the hypothesis which Grynfellt proposed, after studying the iris of the newborn white rabbit, that the membrane of Bruch was a myoepithelial layer, not divisible into fibre cells, whose staining powers are the same as those of the non-striated intraocular muscles. Grynfellt assigns an active contractility to this layer, because the necessity of a dilator muscle has been proven by physiologists. Now, as we shall see later, this necessity does not exist, and the physiologists who claim a dilator muscle have based their arguments upon the affirmative by anatomists of the existence of this muscle. As can be seen, there is a vicious circle. Angellucci showed that there was a too radical difference between the structure of the sphincter and that of the supposed dilator muscles to accept an analogous function. In short, the anatomists are unable to prove the existence of a dilator muscle, and from their articles we gain the impression that it is lacking.

The physiologists are no less incapable of proving its presence. Some have tried to eliminate the action of the sphincter by cutting it. Now, we all know that an iridectomy does not suppress the ocular reflexes. The reaction to light, especially, which is due to the contraction of the sphincter, remains unless it is prevented by other causes (iritis, posterior synechiae, nervous lesions, etc.). The iridal musculature is not directly accessible to experimentation, since its actions are completely disordered as soon as the opening of the anterior chamber permits the escape of the aqueous humor. It is, therefore, necessary to confine ourselves to the study of the nervous iridomotor system, and this is extremely delicate, for it involves agents which act on the pupil and which can rarely be eliminated—pain, fright, shock, hemorrhages, narcosis, etc. Moreover, certain nerves lose their conductibility after death, while others preserve it very long. Furthermore, the difficulty of exactly localizing the destructions and electrical excitations of the nervous system are well known. Finally, account must be taken of the difference in structure between man and most of the laboratory animals. These sources of error explain the discord in the results obtained.

The aim of all these investigations is to support a theoretic argument which at first seems serious; there are two iridomotor nerves; the motor oculi, which is a constrictor, and the great sympathetic, which is a dilator of the pupil. This duality, therefore, necessitates the existence of two muscles, a constrictor, which is the sphincter, and a dilator. We will show later that this conception of pupillary innervation is false. The motor oculi and the sympathetic cause both contraction and dilatation, but under different conditions, and they terminate, not in the iris, but in the ciliary ganglion, which is the center for the pupil, and which gives origin to the true irido-motor nerves, the ciliary nerves.

Against the presence of a dilator muscle can be brought a number of facts, of which the following are the most important:

When the motor innervation of the iris is suppressed by destroying the ciliary ganglion or by cutting its efferent fibres, a maximal dilatation is obtained; in other words, the complete paralysis of the sphincter and the total retraction of the dilator apparatus. On the other hand, excitation causes a maximal contraction; in other words, the complete contraction of the sphincter, and the total relaxataion of the dilator apparatus. These facts can be explained only by the absolute passivity of the dilatation.

If it is believed that the medium dilatation which follows the section of the motor oculi is the expression of the complete paralysis of the sphincter, it is necessary, in order to explain the maximal atropin dilatation, to suppose the spasmodic contraction of the dilatation muscle. It is necessary, then, to claim that a toxic agent produces at the same time opposite effects on analogous muscles. Schultze has shown that atropin and its substitutes paralyze only the nerve endings in the non-striated intraocular muscles. There results, in addition to the cycloplegia, a maximal mydriasis with absolute immobility. The miotics act by exciting these same nerve endings, followed by spasmodic contraction of the ciliary muscle and the sphincter. These toxins do not act on the dilator, and no substance is known which modifies its tonicity.*

The non-striated sphincters of the body and more generally, all annular non-striated muscles (blood vessels, digestive tract, urinary tract, etc.) dilate mechanically. That the sphincter iridis is the only exception to this general physiologic law is inadmissible.

From this discussion we conclude that no dilator muscle of the iris exists. Consequently, the dilatation is passive, and for its explanation two theories may be proposed.

(1) Dilatation of the pupil is due to the ischemia of the iris, following a vaso-constriction of sympathetic origin. This

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*The method of action of cocain and its substitutes, anesthetic substances, is still less known. We know that these toxins produce at first a slight dilatation, with preservation of the reflexes, and secondarily in strong solutions only, a mydriasis which may be maximal. Attempts have been made to explain this double action by saying that it at first excites the dilator, and then paralyzes the sphincter (H. Coppez). This is as impossible for it as for atropin. It is probable that cocain, an anesthetic agent, paralyzes more or less completely the motor cells of the ciliary ganglion, according to the strength of its solution.

old, vascular theory has been recently revised by Venneman,* although Francois-Franck did justice to it a long time ago. In animals which have died of hemorrhage, excitation of the cervical sympathetic causes the usual dilatation of the pupil. Excitation of the sympathetico-Gasserian anastomosis, alone, which contains only irido-motor fibres, dilates the pupil without affecting the iridal circulation. On the other hand, excitation of the carotid plexus, alone, which contains only vasomotor fibres, causes iridal vaso-constriction without modifying the pupillary diamter. Finally when the cervical sympathetic, in which both kinds of fibres are reunited, is excited, pupillary dilatation precedes vascular contraction, and the latter persists even after the pupil has regained its former diameter.

(2) The dilatation is produced by inhibition of the muscle tonus of the sphincter (Francois-Franck), and this relaxation allows the passive retraction of the iridal stroma (Angelucci). This is the application of the mechanism of the dilatation of non-striated annular muscles to the sphincter iridis, and we shall see that it is the only logical conception.

The pupillary movements, involuntary and spontaneous, are caused by various factors, and assume different modalities, to which the name of reflexes or reactions is given.

The analysis of these movements has caused us to advance the following conception—the successive contractions and dilatations of the pupil are only transient modifications of a preexistent and permanent state, to which we have given the name of *"fundamental dilatation,"* and which should first be studied. So far, Venneman* is the only one, as far as we know, who has had this idea; unfortunately, he was unable to clear it of certain erroneous hypotheses which have prevented its clear formulation.

During sleep, the suspension of conscious cerebral activity results in an immobile contraction of the pupil, and all paralysis of cortical functions have the same result (narcosis coma). The sensorial perception is arrested, the lids are closed, the pupil is contracted; in sleep the eye does not functionate, it is closed. Let us remark in passing that the same is true of all non-striated sphincters; in the state of repose they are contracted. For more simplicity and precision, we have decided to call this contraction a "cathypnic contraction" (from the Greek words meaning during sleep).

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*Venneman, Encycl. franc d'Opht. VI, 1906.

*Venneman, Bull. et mem. de l'Ac. de Med. de Belgique, 1905.

On awaking, the conscious cerebral activity reappears. At the same time the sensory nerves commence to functionate, the lids open, the pupils dilate; the eyes are ready to functionate. This is the fundamental dilatation which persists during consciousness and which is maintained by the sum of sensitive excitations, sensory and psychic, of all kinds which incessantly assail our cortex and keep us intelligent. Once produced, it is at every moment modified by the reflexes, so that to value it it is necessary to subtract all of these movements, which is hardly possible. Nevertheless, in practice, it is sufficient to prevent the photo-regulator reactions, by placing the subject in a dark room and preventing accommodation.

It is easy to understand that this fundamental dilatation is proportional to the cerebral activity which causes it; accordingly, with identical luminous excitation, the diameter of the pupil varies with the subject. Very small in the newborn and adult, it attains its maximum in the adolescent. With equality of age, it depends on the vivacity of intelligence and the intensity of thought. In the insane, the pupil is narrow in states of depression and large in states of excitation. In short, in patients who have no lesion of the iridal parenchyma or of the irido-motor nervous system, the fundamental dilatation serves as a measure of the total cerebral activity (sensitive, sensory and psychic). The reflexes which are superimposed upon the fundamental dilatation to increase or diminish it, may be divided into two classes:

(A.) When one of the factors of cerebral activity undergoes a certain modification, the pupil reflects at once this change of psychic tension, and the contractions and dilatations which result constitute one class of reflexes, which we call "sensitivo-motor," in order to indicate their general origin and independence of the visual function. Increase of cerebral excitation causes an increase of dilatation, and, conversely, decrease causes contraction. In short, these reflexes have the same origin as the fundamental dilatations. They may be divided into two groups, according to the kind of excitation.

(a) The sensitive reflexes, whose type is the reflex of pain. It is known that pain is a cortical phenomenon, due to a centripetal peripheral irritation. This reflex is provoked only by hyperexcitation of the skin, and is not produced when pain is not perceived. The same is true in excitations of the special senses, the muscular, visceral and sensory. Violent muscular contractions, attempts at vomiting, for example, are accompanied by a pupillary dilatation. A loud sound, a strong odor, an intense flavor, or a strong tactile sensation produces the same effect. It is also true for a luminous excitation, but this at the same time causes a powerful contraction, which masks the sensitivo-motor dilatation. When this is abolished (paralysis of the motor oculi) the dilatation can be observed and constitutes the famous paradoxical reaction to light.

(b) The psychic reflexes, which have a purely mental origin. They are caused by strong emotions, joy, fear, fright, etc., and in a more general manner by all causes which lead to a sudden increase in thought. To this group belong also the ideo-motor reflexes, which arise in the memory. Their activity is due to the mental representation of a sensation or an idea capable of producing a pupillary reflex.

The authors generally describe by itself the orbiculo-pupillary reflex, which is constituted by a contraction. Many hypotheses have been propsed to explain it. According to some, it is the only reaction to accommodation. According to others, it is caused by a passive congestion of the iris, due to compression of the lids. These two theories do not stand examination. To produce this reflex, the contraction of the orbicularis, that is to say, the normal closure of the lids, is insufficient. The strong contraction, or rather contracture, is necessary, and the effort of the will which produces this spasm suspends the psychic activity almost totally. If the attempt is made to fix the thought on some other subject, the contracture ceases, and only the normal contracture remains. Likewise, the spasm disappears if a sensitive nerve is stimulated (pinching). In short, the orbiculo-pupillary reflex appears as a manifestation of cerebral hypoactivity (Venneman), and it must be considered as a form of psychic reflex.

(B.) The second class consists of reflexes which are intimately connected with vision, so we will call them the sensorio-motor. Furthermore, in order to separate them better from the foregoing, we will reserve for them the name of reactions. They are two in number.

(a) The reaction of light, which limtis the number of rays of light to those necessary to excite the retina normally. It is a quantitative reflex of protection, which, consequently, depends on the luminous excitability and not the visual acuity.

(b) The reaction to accommodation-convergence, which is a qualitative reflex of protection. Its role is to eliminate the rays refracted by the periphery of the lens, where they undergo the aberration of sphericity, and whose numbers depend directly on the curvature of the lens (accommodation).

This division of pupillary movements into sensitivo-motor reflexes and sensorio-motor reactions possesses, as will now be shown, an anatomic basis, each class having its special diastaltic arc.

The motor innervation of the iris is generally described as follows:

"The sphincter is supplied by the oculo-motor; the dilator by the great sympathetic," or, in other words, the motor oculi is the constrictor and the great sympathetic the dilator nerve. This conception, which is actually classic, necessitates the existence of a dilator muscle. It does not take into account the interposition of the ciliary ganglion, and does not explain satisfactorily most of the known facts. It is preserved, nevertheless, because it has the merit of being simple, and because there is no better one to replace it, those which have been proposed not being more proof against criticism.

Let us analyze the role against each segment of the iridomotor nervous apparatus.

(A.) Motor oculi communis. It is known that the motor oculi, whose origin and distribution it is unnecessary to recall, furnishes the short root to the ciliary ganglion.

(a) According to the classic conception, section of this nerve ought to paralyze the sphincter and consequently abolish all power of contraction. Now, this is not so. We will see later that the true paralysis of the sphincter causes a maximal mydriasis with complete immobility. Section of the motor oculi produces only a medium dilatation, and there are not lacking certain movements of contraction. It abolishes only cathypnic retraction and the sensorio-motor or photo-regulator reactions—that is, the reactions to light and to accommodation-convergence. The diameter of the pupil is then equal to that of the healthy pupil in complete darkness or that of the same pupil after section of the optic nerve, i. e., blindness. Observation shows that the diameter varies according to the subject, and in the same individual it depends on the cerebral activity. In short, the fundamental dilatation is not affected. It is, on the contrary, brought into evidence by the abolition of the sensorio-motor. The same is true of the sensitivo-motor reflexes,* which are not modified and which become more apparent. Now these movements require the contraction of the sphincter. Finally the action of the miotics and mydriatics remains normal.

(b) Excitation of the motor oculi causes a pupillary contraction proportional to the intensity of this excitation, but never maximal, and its diameter is never smaller than that of a healthy pupil in maximum contraction under the influence of a strong light. Luminous reaction is abolished, and the same is probably true of the accommodation-convergence reaction; however we do not know how the sensitivo-motor reflexes are affected. It is very rare to see in the clinic the distinct excitation of the motor oculi, if such exists. Furthermore, its experimental study is very difficult, for it requires extensive dissection, to which animals quickly succumb, and it loses its excitability quickly after death. Finally, the action of mydriatics is simply weaker, and that of miotics is not modified: eserin causes maximal, pin-point, contraction.

From these facts it can be deduced that the motor oculi does not directly innervate the sphincter, and that it is not the only pupillo-constrictor, since, after its section, the sphincter retains its tonus and is still able to contract. Its paralysis abolishes only the contraction during sleep and the sensorio-motor reaction.

(c) It is necessary to study the diastaltic arc of the reactions, whose centrifugal path is formed by the motor oculi. Knowledge of it is extremely important for the explanation of certain pupillary troubles.

(1) Each of these two sensorio-motor reactions possesses its own special centripetal route. For the luminous reaction, the excitation starts in the retina, is carried along the optic

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*We do not know whether the ideo-motor reflexes, due to mental representation of visual sensations, persist after section of the oculomotor. They are probably abolished with the photoregulator reactions which gave them origin (Haab).

nerve to the external corpus geniculatum, and from there passes to the nucleus of the III nerves. Destruction of the retina or section of the optic nerve prevents the propagation of the excitation, and causes abolition of the direct reaction; but the excitation of the healthy side causes an equal reaction on both sides (consensual reaction). After the semidecussation in the chiasm, the excitation of one retina is carried in two bands of fibres and a unilateral lesion produces only hemianopsia. Stimulation of the blind half produces no pupillary reaction, but it is at once produced when the healthy half is stimulated. This is the hemiopic reaction, which is very hard to demonstrate, on account of the diffusion of light inside of the ball. There is still a discussion as to whether or not special pupillary fibres are present in the optic nerve. According to those who believe in them, they leave the external corpora geniculata, and, passing through the corpora quadrigemmina, reach the nucleus of the III nerves. On the other hand, those who deny their existence are obliged to admit the presence of intercalary or association neurons in order to establish communication between the two centers. This interesting question is secondary to the question under discussion.

The relations of the primary optic tracts to the pupillary reactions have been well established, but this is not true of the part beyond the corpora geniculata. In 1883, Wernicke proposed the hypothesis that a lesion of the optic fibres the cortical visual centers should cause blindness or heminanopsia without involving the luminous reaction. This law was verified for the first time in 1892 by Leyden, and became one of the laws accepted without question. Nevertheless, in the course of the last few years, Dejerine, Parinaud and others have observed the abolition of the reaction to light due to lesions situated higher than the primary optic centers. In spite of the possible sources of error (loss of luminous reaction following lesion of the ciliary ganglion or nerves), it is justifiable to ask whether the origin of the luminous reaction is not stimulation of the cortical visual centers, i. e., the perception of luminous impressions. The centripetal path would then be formed by fibers which join the calcarine region with the nucleus of the III nerve, and the luminous reaction would then have a cortical origin, as do all other pupillary reflexes. In favor of this hypothesis are to be mentioned the recent researches of Levinsohn—the destruction of the whole region of the corpora quadrigemina produces no effect on the luminous reflex.

A corollary of the law of Wernicke is the hypothesis of Schwartz—a lesion affecting the segment of the centripetal path lying between corpus quadrigeminum and the nucleus of the III nerve should cause a hemiopic reaction without an hemianopsia. This conception has never been clinically demonstrated. Finally, to explain the consensual reaction, certain authors have supposed that that portion of the centripetal path intercrosses in a very complicated manner. We shall see that this is unnecessary.

To summarize: Suppression of the luminous excitation causes abolition only of the photo-motor reaction. A unilateral excitation always produces the same reaction on both sides.

The centripetal path of the reaction to accommodation-convergence is unknown and we are confined to hypotheses. One fact is certain: it is entirely independent of the centripetal path of the luminous reaction. Furthermore, the stimulus does not arise either in the contraction of the ciliary muscle, or in that of the internal rectus, or in the motor nucleus of these muscles, for the pupillary reaction persists when either the accommodation or the convergence is abolished. Convergence has a cortical origin; accommodation is not directly voluntary, but its action is unconsciously provoked by the desire to see clearly objects at a fixed distance, and here, too, the cortical origin is not doubtful. It is, therefore, probable that the pupillary reaction, a synergic movement of these two functions, likewise has its origin in the cortex. Experiments allow us to assume that the part of the cortex under discussion is situated at the junction of the parietal and occipital lobes. Parinaud has shown, furthermore, that there must exist a supranuclear center, in which convergence, accommodation and the pupillary reaction are coordinated. The centripetal path of the latter must traverse the supranuclear center* in order to reach the center of reflex of the diastaltic arc.

Likewise, the idio-motor reflexes for visual mental representations must arise in the optical cortical zone, and the stimulation of this must arise in the center for visual memory. We do not know the centripetal path of these reflexes.

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*It might be asked whether this centripetal path could not arise in this supranuclear center.

Finally, is there a centripetal path for cathypnic contraction? This pupillary closure is not a reflex; as in all non-striated sphincters in a state of repose it is a permanent contraction, due, not to a cause, but to the suppression of a cause, to the disappearance of factors which maintain the fundamental dilatation, i. e., to the suspension of the cortical functions, which leaves the field free to the action of the lower centers. Accordingly, it is better to study the mechanism of this contraction with that of the fundamental dilatation.

(2) The reflex center of the diastaltic arc is situated in the anterior part of the grey matter which composes the nucleus of the III pair of nerves. Anatomy has not shown whether there is one median center or two symmetric centers. If the latter hypothesis is true, the connection between the two cellular masses is very close, and, functionally, the center is a single one. The unilateral centripetal stimulus is always transmitted to the two centrifugal paths, which allows the understanding of the consensual reaction.*

Furthermore, the center is the same for the two sensorio-motor reactions, and its destruction abolishes them simultaneously. This duality of centripetal innervation is frequent, and is present especially in the other nuclear centers of the III pair. Finally, although very close, the cilio-motor center is independent of the irido-motor center.

According to the classic conception, this center should be only irido-constrictor; nevertheless, some authors have seen that the pupillary contraction is still possible after section of the motor oculi, and, in order to explain this, they have been led to suppose the existence of a frenatic center in the bulb (Bach), or of a pupillo-constrictor very close to or fusing with the dilator center. The truth, however, is that the irido-motor center governs at the same time pupillary contraction and dilatation, but only in the sensorio-motor reactions.

(3) The center gives origin to two symmetric centrifugal parts, one for each eye, running in the motor oculi. We have

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*The consensual reaction is not a peculiarity of the luminous reaction; it is the general rule of all pupillary reactions. A unilateral pupillary stimulus always causes an equal reflex on both sides.

studied above the irido-motor functions of this nerve. Let us recall that each path takes part in both sensorio-motor reactions, and that its section abolished both simultaneously, but only on the side affected, the reactions on the healthy side remaining normal. As we will show, the centrifugal path ends in the ciliary ganglion.

(B.) The great sympathetic. According to the generally accepted ideas, the ocular sympathetic fibres have their real origin in the cord at the level of the right cervical and first dorsal vertebrae, i. e., the cilio-spinal center of Budge. They leave the spinal column in the anterior roots of the first dorsal nerves (Oppenheim), thence passing via the ramus communicans into the first thoracic ganglion. From here they follow the anterior branch of the circle of Vieussens and pass into the cervical chain. Above the superior cervical ganglion, the vaso-constrictor fibres pass into the carotid plexus, leaving it at the level of the sphenoidal fissure to enter the orbit, either alone or in company with the nasal nerve (the sympathetic branch of the anatomists). The irido-motor fibres pass towards the Gasserian ganglion (sympathico-Gasserian anastomosis), which they enter, reaching the ciliary ganglion by means of the long branch (Francois-Franck). They lie close to the fibres of the trigeminus, without having any connection with them, and it is wrong to say that they reach the eye through the long ciliary nerves.

(a) According to the classic conception, section of this nerve should paralyze the dilator muscle, or, at least, prevent all possibility of dilatation. Now, this is not so. The pupil is contracted, but not ad maximum, and its diameter is equal to that of the healthy pupil during sleep. When awake, the abolition of the fundamental dilatation and sensitivo-motor reflexes is found. On the other hand, the sensorio-motor reactions persist, however their ampliture may be diminished, due to the loss of the fundamental dilatation. Now, these movements require pupillary dilatation. The action of miotics and mydriatics remains normal, at least for the first few days after the section, for, as we have found, later on degenerative lesions in the ganglion and ciliary nerves are found, causing diminution of the action of the toxins.

With the pupillary troubles, section of the sympathetic causes other symptoms; paralysis of Mueller's muscle with retraction of the globe (enophthalmos, apparent diminution of the palpebral orifice and false ptosis) and paralysis of the vasoconstrictors of the corresponding side of the face. These three classes of symptoms comprise the syndrome of Horner. Section of the sympathico-Gasserian anastomosis alone produces only pupillary troubles.

(b) Stimulation of the cervical sympathetic causes a pupillary dilatation which is proportional to its intensity, and which may become maximal. The sensitivo-motor reflexes are abolished; the sensorio-motor reactions remain, but their amplitude is diminshed in proportion as the dilatation is increased. The mydriatics preserve their normal action, but that of the miotics decreases in proportion to the intensity of the stimulus.

In addition to the pupillary trouble, stimulation of the cervical sympathetic causes symptoms which are the opposite of those following its section. Contraction of Mueller's muscle and protrusion of the globe (exophthalmos with apparent enlargement of the palpebral orifice) and vaso-constriction of the corresponding side of the face. These three classes of symptoms form the syndrome of Basedow.*

Stimulation of the sympathico-Gasserian anastomosis causes only pupillary troubles.

From these facts it may be deduced that the sympathetic is not the only pupillo-dilator, since the pupil may dilate even after its section. Its paralysis abolishes only the fundamental dilatation and the sensitivo-motor reflexes.

(c) The cervical sympathetic forms the centrifugal path, or, rather, a part of the centrifugal path, of the diastaltic arc of the sensitivo-motor reflexes.

(1) We have explained, above, our conception of the fundamental dilatation, and we have shown that the sensitivo-motor reflexes have the same origin—the stimuli of all kinds which reach the cortex and keep us awake. Accordingly, dilatation and reflexes should have the same centripetal path. Experimental stimulation of a certain point on the cortex causes an equal dilatation of both pupils,† so we cannot claim

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*It is necessary not to confound the syndrome of Basedow with Basedow's disease. In the latter, pupillary troubles have never been seen.

†However, moderate electrical stimulation of zone 13 of Ferrier (the descending branches of the gyrus angularis) causes pupillary contraction with closing of the lids, but if the current is strong, a dilatation follows, as at other points on the cortex.

cortical dilator centers, in the strict sense of the word, but only points of departure, which are not even specialized. (Viault and Jolyet.)

Whatever the cause of the cortical stimulation may be, the reflex is always bilateral, and ablation of only one hemisphere does not prevent both pupils from reacting to pain. Therefore the centripetal path must be composed of all the descending fibres of the corona radiata. Ceston and Chenais* have proposed the theory that this path was condensed into a bundle of fibres, which pass into the posterior arm of the internal capsule, after having traversed the optic thalamus, and then enter the pons, where they decussate with those of the opposite side and pass down the medulla and cord to the center of Budge.

According to this conception, it is necessary to suppose a demi-decussation of the centripetal path, for the unilateral cortical or subcortical usually always acts simultaneously on both pupils. On the other hand, stimulation or destruction of one lateral half of the cord or medulla has effect only on the pupil of the same side. Therefore, there would exist two direct centripetal paths. independent of each other. Furthermore. we must remember the syndrome of Basedow and that of Horner.

(2) If it is admitted that the reflex center of the diastaltic arc is the center of Budge, there must be two centers, one in each half of the cord, between which there is no connection. Stimulation or destruction of one influences only the corresponding pupil, and the disturbances produced are the same as those caused by the stimulation or the destruction of the spinal and bulbar portion of the so-called centripetal path or of the peripheric centrifugal path (cervical sympathetic).

The lower limit of the cilio-spinal centers is distinctly marked by the point where the centrifugal fibres leave the spinal cord. On the other hand, it is impossible to assign them an upper limit, and no positive argument exists against their prolongation upward into the medulla. The center cannot be separated from its centripetal path. This fact conflicts with the idea of a cilio-spinal center clearly circumscribed in the spinal cord (Morat and Doyen).

According to the classic conception, these centers should be only irido-dilator. Still some authors have found that pupillary dilatation was possible after section of the cervical sympathetic, and to explain this have been led to suppose the existence of a pupillo-dilator center very close to or fusing with the constrictor center, or of an inhibitory center of contraction in the medulla (Bach) The truth is that the irido-motor center governs both contraction and dilatation of the pupil, but only the fundamental dilatation and the sensitivo-motor reflexes.

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*Ceston and Chenais, Gazette des Hopitaux, 1903, No. 125.

These different considerations have induced us to question the existence of the center of Budge. Experiments and the clinics have shown the necessity of a medullary irido-motor center or a cilio center. Are there two centers? That was the conception of Bach in his theory of two centers governing contraction and dilatation. Other authors, not daring to dethrone the cilio-spinal center, admitted this duality. (Ott, Mayer and Pribam, Steil and Langendorff, Wertheimer, etc.) The latter questioned even whether the spinal center could not be reserved for "reflexes which arise in the sensitive nerves of the body, while the medullary center would react to sensory and cerebral influence alone." However, observations do not justify this supposition, for a bulbar or spinal lesion abolished all sensitivo-motor reflexes, without exception. After all which we have said this duality seems useless and inadmissible, and we agree with Schiff and Salkowsky in admitting only one medullary center. Certain anatomico-clinical findings allow us to locate this cilio-bulbar center in the columna solitaris, "the prolongation of the intermedio-lateral tract of the cervical portion of the cord, the origin of the sympathetic" (Cestan and Chenais). This column is known to be in relation with the cortex by fibres partly direct and partly decussating, which follow the band of Reil and traverse the thalamus, and which may be considered as the centripetal path of the diastaltic arc.

It is still necessary to say something concerning another theory. Mathias Duval and Laborde, by experimentally destroying the inferior root of the trigeminus, caused pupillary troubles identical with those following section of the cervical sympathetic. Therefore, pupillary troubles of bulbar origin should be due to lesion of irido-motor fibres contained in the trigeminus. This nerve indeed contains sympathetic fibres running to the eyeball, but they are only vaso-dilator. But, as we will show later, there is no trace of irido-motor fibres. To explain the experience of Duval and Laborde, it is necessary to remember that the inferior branch of the trigeminus arises in the columna gelatinosa, which is very close to the columna solitaris, and which has the same connections with the cortex. It is, therefore, very possible that the lesion affected both nuclear centers and perhaps the initial portion of their centrifugal paths. From the above we conclude that the reflex center of the diastaltic arc is situated in the cord and not in the medulla. There are two symmetrical cellular masses, but the semidecussation of the centrifugal paths and the very close connections which exist between them allow them to be considered as forming a center functionally one.

(3) This cilio-bulbar center gives origin to two centrifugal paths, which are symmetric and independent, one for each eye, and they may be divided into two parts: the first, usually called the centrifugal path, passes down the medulla and the cervical part of the cord, where it runs in the doso-median part of the lateral reticular substance (Ceston and Chenais); it leaves the cord through the anterior root of the first dorsal pair of nerves, and the point of separation forms the center of Budge. The second follows the cervical sympathetic, and we have studied its functions above. The motor action of the two is the same; nevertheless, the nervous influence seems to weaken as it follows the chain of ganglions, for experiments show that the oculo-pupillary distrubances are more marked after lesion of the medulla than after a simple section of the cervical sympathetic*.

This path is common to all sensitivo-motor reflexes, and its interruption abolishes them simultaneously, both only on the affected side. It likwise ends in the ciliary ganglion.

(C.) The trigeminus. An irido-motor role has often been ascribed to the trigeminus. This is an error, due to several causes.

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*To explain this phenomenon, as well as the troubles of medullar origin, certain authors have supposed that each cilio-spinal center has two centrifugal paths, dividing the nervous influence. One passes into the cervical sympathetic and the other passes up into the medulla to join the roots of the trigeminus and reaches the eye through this nerve (Frenkel). We think that it is useless to refute this theory.

The trigeminus is a sensitive nerve and evokes reflexes to pain.

The sympathetic pupillo-motor fibres are very close in the medulla to the inferior roots of the V nerve and a destructive lesion almost always affects them simultaneously.

The irido-motor sympathetic fibres hug the Gasserian and ophthalmic ganglia, and it is they which are inevitably affected by section or excitation of the trigeminus.

The anatomic reports on the trigeminus do not allow the statement that the excitation of the intracranial portions are not carried at the same time to the motor oculi.

Finally a prime fact dominates this discussion; after section of both the cervical sympathetic and the motor oculi, excitation of the trigeminus has no effect on the pupillo-motor action.

(D.) Ganglion and cilary nerves. The ciliary ganglion is known to be composed of multipolar cells, whose axis cylinders compose the motor fibres of the ciliary nerves. We need not concern ourselves here with the sensitive centripetal fibres which traverse it without stopping.

(a) Relation of the ganglion to its motor roots. Section of the motor oculi causes no cellular lesion in the ganglion (Apolant) nor do trophic troubles in the iris. Likewise, destruction of the ganglion or the organs which it innervates does not react on the motor oculi, and the nuclei of these nerves are never altered (Marina, Bernheimer). We have already stated that the irido-motor fibres of the III pair seem to lose their conductivity immediately after death. All these facts seem to indicate that these fibres terminate in the ganglion.

These facts are a little more complicated by the cervical sympathetic. Its section causes in animals at the end of a certain period of time, the degeneration of a small number of ganglionic cells (Lodato), which explains the mild lesions of the ciliary nerve and the iridal parenchyma (laxity of miosis) which is often found in man some time after a sympathectomy. On the other hand, destruction of the ganglion does not seem to react either on the cervical sympathetic or the spino-medullary tract. After death, the conductivity of the irido motor fibres persists for a very long time. It is probable, therefore, that most, if not all, of these fibres likewise terminate in this ganglion, but their relation with the multipolar cells is certainly more intimate. Further, anatomy and embryology have established the sympathetic character of the human ciliary ganglion. Finally, the cervical sympathetic contains both vaso-motor and trophic fibres, and their section cannot but react on the nutrition of the ciliary ganglion, its branches and the innervated tissues.

The simultaneous section of both motor roots causes a medium dilatation of the pupil with complete immobility. The sphincter is, therefore, not completely paralyzed, but preserves a part of its tonus. Unfortunately, we do not know the end results, for the extraorbital section of these nerves demands dissection, which quickly causes the death of animals, and the intraorbital involves fatally the trigeminal root, resulting in neuroparalytic keratitis and suppuration of the eye.

(b) The motor action of the ciliary ganglion differs from that of its roots. Its stimulation causes a pupillary contraction proportional to its intensity, sometimes ad maximum, i. e., punctiform. The contraction of the sphincter, therefore, may become a contracture. Extirpation of the ganglion or its destruction by nicotin, a specific poison for sympathetic cells (Marina), causes the maximal dilatation of the pupil with absolute immobility (Jegorow), i. e., complete parlysis of the sphincter.

Ciliary neurotomy or exenteration of the ball causes degeneration of all the cells of the gangion.

(c) The motor action of the ciliary nerves is the same as that of the ganglion. Their section causes paralysis of the sphincter (maximal mydriasis), and their excitation causes a contraction which may become a contracture (maximal miosis). Their distribution is such that each branch innervates a section of the sphincter. Partial section of the ciliary nerves paralyzes only the corresponding iridal segment, the healthy part retaining its motility.* (Redard.)

This experimentation is inapplicable to the intraocular part of the ciliary nerve. Increase of tension, especially when it is acute (acute glaucoma), causes paralysis of these nerves, i. e., mydriasis. On the other hand, decrease of tension has a very special action; if the pupil is dilated from any cause, it contracts; if it is contracted, it dilates; in both cases it tends to acquire the same diameter, with absolute immobility. This phenomenon is produced by enucleation of a healthy eye. The arrest of circulation and the resulting hypotonia counteracts the effect of the section of the ciliary nerves; if, then, a fluid is injected into the ball so as to augment the tension, the paralytic dilatation of the sphincter is produced. We have already spoken of the action of toxins on the pupil; mydriatics (atropin) paralyze the nerve endings of the sphincter (maximal dilatation), and miotics (eserin) stimulate these same endings (maximal contracture); in both, the immobility is absolute.

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*The pupil is then deformed. In reality, the paralyzed part is not immobile, for the movements of the healthy part are propagated to it, but its movements are passive and of small amplitude.

Finally in completely blind human and in animal eyes freshly enucleated, a slight pupillary contraction can be caused by throwing on the iris the light of a strong electric arc. Schauz has shown that this peripheral reflex is due to the action on the iridal tissue of ultra-vilolet rays, which are very plentiful in this light.

From the above the following conclusions may be drawn:

The motor oculi and the great sympathetic do not directly innervate the sphincter iridis; they act only on the ciliary ganglion, which is the true motor center of the sphincter (van Gehuchten, Marina).

When the eye is in repose, the motor oculi controls the closure of the pupil (cathypnic contraction); when it functionates, it is the great sympathetic which maintains the open pupil (fundamental dilatation). From this standpoint, the first may be called the constrictor nerve and the second the dilator nerve of the pupil, but only in the sensorio-motor reactions. Section of either one causes not paralysis of a muscle, but paralysis of a function. In short, it is necessary to give up the generally accepted conception of muscular nerves and to substitute that of functional nerves; the motor oculi is the nerve of sensorio-motor function and the great sympathetic that of sensitivo-motor function.

After this analysis, it remains to synthetize all the facts which have been brought to light. Evidently, a new theory of the iridal motor innervation must be proposed.* One more! The literature is full of them! Yet we must try to explain those facts which we have observed, and to understand them.

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*We have already outlined this theory in the Gazette hebd. des sciences méd. de Bordeaux, March 14, 1909.

We should recall the wise advice which Professor Pierre Delbet once gave: "If it is difficult not to make an hypothesis, it is deadly to believe in one already made." An hypothesis should not pretend to be a definite expression of the truth, but only a step in the search for this truth, and must be abandoned when a new one makes an advance towards the truth.

(1) The sphincter iridis, like all non-striated sphincters, is continually in a state of contraction, more or less pronounced; it is the augmentation or diminution of this muscle tonus which causes contraction or dilatation of the pupil.

(2) The muscle tonus is maintained by the tonic action of the cells in the ciliary ganglion. This ganglion is the center for the sphincter and with its efferent fibres forms the peripheral motor innervation of the pupil.

(3) Like all the peripheral nervous centers, the ciliary ganglion is under the control of higher centers, which augment or decrease the tonic action of these cells. These variations result in proportional modifications of the muscle tonus: that is to say, in contraction or dilatation of the pupil. The higher centers form two independent systems which may be regarded as reflex arcs; we will call them the cordal and the mesocephalic.

(a) The cordal system. The cervical sympathetic with the spino-medullary tract (centrifugal path) connects the ciliary ganglion with a nucleus in the upper part of the medulla (reflex center). This cordal irido-motor center is in turn connected (centripetal path) with all the cortical areas where are perceived those sensitive stimuli, sensorial and psychical, which make up cerebral activity and consciousness.

(b) The mesocephalic system. The motor oculi (centrifugal path) joins the ciliary ganglion with the muscles of the III pair of nerves (reflex center). This mesocephalic irido-motor center has two independent centripetal paths: one puts into communication with the retina (or perhaps with the cortical visual areas), and the other with the cortical areas for accommodation and convergence.

(4) To understand the action of these two systems on the ciliary ganglion and, consequently, on the sphincter, the pupillary movements must be divided into two classes—essential and accessory movements.

(a) The essential movements are the opening and closing of the eye. In sleep the eye is in repose, the sphincter does not functionate and, like all non-striated sphincters, it is then contracted; the pupil is closed (cathypnic contraction). In the state of consciousness, the eye must perceive, the sphincter functionates and consequently it is dilated: the pupil is dilated (fundamental dilatation). The contraction is due to the permanent excito-reflex action of the mesocephalic centers. This plays the same role as the anterior horns of the cord and has the same significance. Dilatation is caused by the arrest of this power. In the state of consciousness, the cordal cortex has the usual inhibitory action of the cerebral cortex and inhibits in the ganglion the excito-reflex power of the mesocephalic center.

(b) The accessory movements are the pupillary reflexes. They have a transitory character and are produced only in a state of consciousness. They are of two kinds.

I. The sensitivo-motor reflexes, which are only quick modifications of fundamental dilatation; augmentation or diminution of cortical excitation augments or diminishes proportionately the inhibitory action of the cordal center. Naturally, the cordal center forms the diastaltic arc of these reflexes.

II. The sensorio-motor reflexes (reaction to light and to accommodation-convergence), whose aim is the protection of the retina and the perfecting of vision. Luminous stimulation and that of the centers of accommodataion and convergence cause an increase in the excito-motor power of the mesocephalic center; that is to say, a proportional diminution of the fundamental dilatation. Here, on the other hand, it is the mesocephalic system which forms the diastaltic arc of these reactions.

The sensorio-motor reactions are superimposed on the sensitivo-motor reflexes, both preserving their independence.

In reality, there exists an intimate relation between the essential movements and the accessory ones. In brief, pupillary dilatation and sensitivo-motor reflexes are caused by the cordal irido-motor system, while contraction and the sensorio-motor reactions are due to the mesocephalic system.

To summarize, our theory is only the application to the sphincter iridis of ideas which we possess concerning the physiology of other non-striated muscles of the body, remembering the adaptation of the eye to its sensorial role.

Finally, we should remark that the ciliary muscle, like the sphincter, contracts and dilates under the influence of the motor-oculi alone, to bring about the lenticular modifications necessary to accommodation. But, contrary to the classic belief, Morat and Doyon have shown that the great sympathetic plays a role likewise in the innervation of this muscle and that it can cause contractions and dilatations foreign to the visual functions. It is, therefore, very probable that the ciliary muscle has motor innervation similar to that described for the sphincter iridis. Its demonstration, however, is much more difficult, because its movements are not directly visible, and only the modification of the lenticular curvature or the variations of the dynamic refractions can be observed.

In a later memoir we will show the application of this theory to the pathology and symptomatology of pupillary troubles.

# TRANSFERRED OPHTHALMITIS.*

CHARLES A. OLIVER, A. M., M. D.,

PHILADELPHIA.

At the seventy-fourth annual meeting of the British Medical Association, held in Toronto, Ontario, in 1906, I had the honor to participate in the discussion on "Sympathetic Ophthalmia." At that time I gave my views in regard to the term in the following words:† "For several years past I have taught my classes and private students that so-called "sympathetic irritation" and "sympathetic ophthalmia" are simply different stages of a condition which I have preferably termed "transferred ophthalmitis." I believe that the expression "sympathetic," as ordinarily understood in this connection, has no significance and bearing whatever, and I am certain that the term "irritation" is just as false; I am also sure that it must be conceded that the word "ophthalmia" should not be applied to any form of inflammation of the interior of the eyeball. The word "transferred" is correct, no matter what the process may be, and the generic term "ophthalmitis" is both adequate and comprehensive.‡

In this brief communication I shall not enter into the many interesting questions of direct and indirect cause and effect, such as nature of offensive agent, character of wound, injury, or primary inflammation, position of chief local disturbance, introduction of aerobic and non-aerobic germ-life into the organ, degree and kind of blood and lymph reaction, presence of dyscrasic material in the vascular canals and lymph channels, condition and freedom of lymph spaces, etc.—which questions I, with two of my assistants, am at present engaged in deciding and preparing for a series of papers for future publication.

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*Prepared for the Section on Ophthalmology, XVI. International Medical Congress, held at Budapest, Austria, 1909.

†The term "migratory ophthalmia" (simply significant, in the light of present-day ophthalmology, of a wandering conjunctivitis), is open to the same objections as here given.

‡See "The British Medical Journal" for the 29th December, 1906, for these same thoughts and beliefs.

My object in this paper is to further emphasize and to more broadly disseminate the findings which I offered to the Section on Ophthalmology of the American Medical Association at its 1907 meeting, held in Atlantic City, N. J.* In that communication upon the subject, I stated that for many months I had been engaged in the collation of the histories of all of the recorded cases of every form of so-termed "sympathetic disease" that had been treated in the dispensary and indoor services of Wills' Hospital in my own city—Philadelphia—since its opening, a period embracing more than seventy years. During these studies I received help from three of my personal assistants.†

As a result, I soon realized that in spite of a vast yearly increase of the work done at the hospital, a broader comprehension of the disease-complex, and an earlier recognition of the condition, there was a decided lessening in the relative number of recent cases, and a less degree of fatality among them than among those which had been treated in former years.

As I then stated, the many desultory, and at times uncertain, cases of the first thirty-five years' work of the hospital, were massed together, while the latter half of this portion of the hospital's work, which had been systematically arranged into annual groups, was divided into periods of time similar to those that I had employed in a study of several thousand cases of extraction of senile cataract.‡

Critical inquiry into the detailed histories of the cases elicited many points of interest and of value. For example, it was found that, in spite of a vast increase of the types of cases which are ordinarily supposed to be provocative of the condition (some 62 per cent), the proportionate number of cases was actually reduced nearly 80 per cent within the last ten years of the series. This I considered as a remarkable improvement, and one which I deemed worthy of record, when it is realized how long the institution has existed, that it is situated in the midst of a large industrial and commercial center, that it is near to an immense mining territory and agricultural district, and that it has always been favorably known; reasons which, for many years past, have been the means of bringing from ten to fifteen thousand new eye cases annually to its doors.

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*See 1907 "Proceedings of the Section on Ophthalmology of the American Medical Association."

†Drs. S. Rush Ketcham, Albert J. Britt, and Ida Louise Haverstick of Philadelphia.

‡"A Study of the Nativity, Sex and Age, Occupation, and Social Condition of Three Thousand Four Hundred and Thirty-six Cases of Senile Cataract Operated Upon at the Wills' Hospital in Philadelphia."

Among the indirect causes for these good results I mentioned:

1. More improved and better constructed machinery, which, as a rule, has contrivances for the rapid and the safe removal of extraneous and useless debris, etc.

2. More carefully arranged, more sanitarily built, and more adequately illuminated factories, mills, shops, etc., than formerly.

3. A broader compulsory employment of personal protectives by the workmen during their occupation (as was found by comparison and contrast of the conditions prevailing at the different places from which the patients came).

4. More prompt search for and amelioration of the original disturbing conditions. Study of the cases showed that for the past ten years the time elapsing between the onset and the first examination and treatment had greatly lessened; this in great measure having been the result of the present realization of the value of speedy relief, and the increased ease of railway communication between distant centers and the hospital.

5. Better personal condition of the patient. This was so pronounced that in many cases prognoses could be determined in great measure after a cursory inspection of the general appearance of health and cleanliness of the patient; this, in addition to the race, the nationality, the sex and the age—all of which serve as greater prognostic factors than are ordinarily believed.

6. A better arrangement on the part of the hospital for immediate attention to first aid applications and remedial measures to every case that is brought to the institution. For the past six years there has been an efficient medical officer constantly on hand to attend promptly to any case applying,

while two or more of the surgical staff are nearly always to be found within a few minutes' time for personal advice and action.

7. A higher grade of skill on the part of those in charge of the cases than formerly. This has been obtained through a vast increase, and now almost constant repetition, of similarly affected cases.

8. A better equipment, always available, of all of the modern instruments and appliances known, thus allowing more or less positive results for good to be obtained within the briefest periods of time after the admission of the patient.

Among the direct causes for this great lessening of the disease I enumerated:

1. An increased certainty in intelligent action by the early employment, whenever necessary, of one of the most exact methods of X-ray studies in the country.

2. The prompt removal, whenever possible, of any foreign body from the interior of the eyeball by the methods which have been found to be the latest and the best adapted for each special case.

3. A greater tendency towards the early removal of shattered and useless eyeballs of dangerous types by the simplest and the least complicated methods of operative procedure.

4. A better preparation of the patient for—as nearly as may be possible—aseptic operative measures or special remedial treatment in the wards of the hospital, every case being subjected to the best and the least disturbing cleansing processes for both skin and mucous membrane; each case being isolated, as far as practicable, by being placed in bed; and every affected eye being promptly treated for prevention or for lessening of reaction and reduction of inflammation.

5. A more prolonged continuance of controlled therapy than formerly thus ensuring an increased probability for permanent quiet and a greater chance of escape from subsequent disturbance.

6. Better facilities for guard over the cases for long periods of time, each patient always being personally requested, and whenever possible, required, through his employer, to report at fixed intervals for careful restudy of the remaining conditions.

*1507 Locust street.*

# THE VISUAL REQUIREMENTS OF TRANSPORTATION EMPLOYES.*

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This subject naturally divides itself into five queries, i. e.:

1. Is there a necessity for examination of transportation employes as to their vision and color perception?

2. What amount of vision and what color perception is *actually necessary* for such employment?

3. What visual acuity and color perception *should be required* of transportation employes?

4. Who should decide whether an applicant for employment or for re-examination meets with the required standards?

5. Should old employes requiring glasses to bring their vision up to the required standard, be retained in service and also retain their grade in line of promotion?

## NECESSITY FOR EXAMINATION.

It is evident that the Government and officials of steam and street railways have recognized that there is a necessity for such examinations, from the fact that individuals entering the navy or marine service, or the employment of steam or electric railways, are required to pass a rigid examination as to visual qualifications.

The speed mania of the present century is a decided factor (and by no means the least) in making examination of the visual qualifications of transportation employes a necessity. For in order to comply with the demanded increase in speed, with a minimum of danger, certain safety devices were required; the result being the various block signal systems now in use on practically all railways.

These require accurate as well as quick visual appreciation of the position of a semaphore or the color of a disk or flag by day, and the determination of the color of a light at night. This *must be accomplished* at sufficient distance within which to stop or change the course of a vessel, and bring a train or electric car under control or to a standstill.

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*Read before the Chicago Ophthalmological Society, May 10. 1909.

Individuals having an amount of ametropia which does not allow of the determination of the position of a semaphore, or who have a lack of color perception which may cause them to mistake a color signal at a distance not sufficient within which to control a fast or heavy train, should not be placed in control of the motive power of steam or electric roads. To eliminate these an examination is necessary.

Re-examinations are also necessary to determine that the vision of men already in the employment of transportation companies is not deteriorating.

### NECESSARY VISION.

What amount of vision and color perception is *necessary* for transportation employes?

This is a mooted question and depends largely upon the individual. The position of the semaphore blade used in block signaling, having a good background, with perfect weather conditions, can be determined by the *average eye* at a distance of from two to three miles. A distance of about 2000 feet is necessary within which to bring a six-car train, running seventy miles an hour, to a standstill. Consequently the signal must be determined at a distance of about one-half mile to stop a limited train.

It is a proven fact that test card vision, as estimated in an office with test-type, is not a criterion of what an individual's sight will be when put to a practical test.

Super concludes that savages are not superior to civilized men in visual acuity, but rather in being educated to observe and interpret what they see. This is evidenced by the result of a series of tests conducted by the officials of one of the largest railway systems in the United States, showing the effect upon vision of training, habitual usage and enrivonment.

"This (says the Ophthalmic Year Book, 1908) confirms the impression gained from clinical experience, that much of the failure of vision spoken of as senile, is really pathologic and caused by excessive demands in the way of near vision and by abnormal general conditions incident to civilized life."

The following are a few results of the tests which were conducted by installing a semaphore with a clear sky background and marking off intervals each 100 feet up to 6000 feet. The individuals being tested were placed upon an engine, which was run toward the signal; the individual being examined stating the indication of the signal (which could be changed at will) as soon as it became visible to him. Each eye was tested separately.

No. 1. Age. 52. Service 30 years. Engineman 26 years.

| | |
|---|---|
| Vision O. D., 20/50 | With glasses. Vision O. D..........20/30 |
| Vision O. S., 20/50 | With glasses, Vision O. S ..........20/30 |
| Vision Combined 20/40 | With glasses, Vision combined..20/30 |
| Semaphores O. D. | Without glasses..........1700 feet plain |
| Semaphores O. S. | Without glasses..........2600 feet plain |
| Semaphores combined | Without glasses..........2100 feet plain |

Smoky and hazy, also getting dark; 6:10 p. m.

No. 2. Age 56. Engineman 26 years.

| | |
|---|---|
| Vision O. D. 20/70 | With glasses, Vision O. D..........20/20 |
| Vision O. S. 20/40 | With glasses, Vision O. S ..........20/20 |
| Vision Combined 20/40 | With glasses, Vision combined..20/20 |
| Semaphores O. D. | Without glasses....................3400 feet |
| Semaphores O. S. | Without glasses....................3200 feet |
| Semaphores Combined | Without glasses....................3400 feet |

Second test, running toward semaphores.

| | |
|---|---|
| Semaphores O. D. | Without glasses....................3950 feet |
| Semaphores Combined | Without glasses....................3950 feet |

No. 3. Age 65. Service 31 years. Engineman 28 years.

| | |
|---|---|
| Vision O. D. 20/70 | With glasses, Vision O. D..........20/20 |
| Vision O. S. 20/100 | With glasses, Vision O. S ..........20/20 |
| Vision Combined 20/50 | With glasses, Vision combined..20/20 |
| Semaphores O. D. | Without glasses....................3100 feet |
| Semaphores O. S. | Without glasses....................2500 feet |

With glasses normal.*

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*Determination of a signal at one mile being considered normal.

No. 4. Age 51. Service 29 years.. Engineman 21 years.

Vision O. D. 20/100 With glasses, Vision O. D..........20/20
Vision O. S. 20/70 With glasses, Vision O. S ..........20/20
Vision Combined 20/70 With glasses, Vision combined..20/20
Semaphore O. D. Without glasses........................1600 feet
Semaphore O. S. Without glasses........................3250 feet
Semaphore Combined Without glasses........................3350 feet

No. 5. Age 66. Service 34 years. Engineman 28 years.

Vision O. D. 20/100 With glasses, Vision O. D..........20/20
Vision O. S. 20/100 With glasses; Vision O. S ..........20/20
Vision Combined 20/70 With glasses, Vision combined..20/20
Semaphores O. S. Without glasses........................2640 feet
Semaphores Combined Without glasses........................3000 feet

No. 6. Service 29 years. Engineman 20 years.

Vision O. D. 20/100 Vision O. S. 20/100
Vision Combined 20/100
Semaphores O. D. Without glasses, running......1900 feet
Semaphores O. D. Without glasses, standing .....2100 feet
Semaphores O. S. Without glasses, running......2100 feet
Semaphores O. S. Without glasses, standing .....2400 feet
Semaphores Combined Without glasses, standing .....3500 feet

Second test.

Semaphores Combined Without glasses, standing .....3900 feet
Semaphores Combined Without glasses, running......3900 feet
Semaphores Combined With glasses..............................6000 feet
Which was greatest distance tried.

No. 7. Age 50. Service 28 years. Engineman 25 years.

Vision O. D. 20/20
Vision O. S. 20/200 Does not wear glasses
Semaphores O. S. Without glasses ........................1850 feet

No. 8. Engineman 25 years.

Vision O. D. 20/200 With glasses, Vision O. D..........20/20
Vision O. S. 20/200 With glasses, Vision O. S ..........20/40
Vision Combined 20/200 With glasses, Vision combined..20/20
Semaphores O. D. Without glasses........................2000 feet
Semaphores O. S. Without glasses........................2000 feet
Semaphores Combined Without glasses, standing .....2000 feet
Semaphores Combined Without glasses, running......1800 feet
Semaphores Combined With glasses ..............................one mile

The reduction of vision in the above reported cases was in the majority of instances due to latent hyperopia becoming manifest with increasing age. The distances at which the correct interpretation of the signal indications was determined, are certainly remarkable, and demonstrate Super's conclusion, that distant vision is to a large extent a condition of being educated to observe and interpret what one sees.

### NECESSARY COLOR VISION.

There are many instances on record where men with dichromatic or monochromatic vision have for years run engines hauling fast trains, and have never had a mishap or made a mistake in a color signal. Yet when tried out with any of the office tests used, they immediately show their defect. The universal opinion among ophthalmologists and laymen who know anything about the subject is that any individual with defective color vision should not be placed in control of motive power where color signals are used to control the movements of transportation units.

### VISION REQUIRED.

What visual acuity *should be required* of transportation employes? There is no doubt that the very best vision and color perception should be required, for the reason that there are so many factors, especially about steam railways, that interfere with vision. It is many times difficult for individuals with even the best sight to make out signal indications at sufficient distance within which to control a train should an emergency arise. In such a difficulty the man with 20/20 vision is in a much better position to cope with existing conditions (as far as vision is concerned) then one with 20/40 vision.

### WHO SHOULD CONDUCT EXAMINATIONS.

Who should decide whether an applicant for employment, or for re-examination, meets with the requirements?

The majority of roads have the examination for vision and color perception conducted by some member of the official staff. Some roads require each person so selected to make such examinations, *to be first examined and instructed by an ophthalmologist designated by the company.* Cases passed upon by these examiners, in which there is any question as to their fitness, are referred to the Division Superintendent, who, in turn, refers them for examination to an ophthalmologist designated by the company, whose verdict is final.

This arrangement seems to give satisfaction in the United States, to all concerned, except possibly a few eye men who would like the position of company ophthalmologist.

There is, however, a factor in examinations so conducted which brings up the question of glasses in railway service, i. e., the elimination of individuals with latent hypermetropia, who in later life will need lenses to bring their vision up to the required standard.

An attempt is made by most railroads to effect such elimination by requiring applicants to read the test letters through convex lenses one or two diopters strength; they being rejected if able to do so.

The elimination of color defectives is, however, of equal importance, and many roads, recognizing the fact that their examiners are very lax in this part of the examination, have added to their rules, one requiring the examiners to adhere strictly to the instructions laid down by Holmgren or Thomson in using the color selecting test. This is a step in the right direction, but as Dr. Jennings says: "Railroad officials, deceived by the *seeming simplicity* of the method, often allow section foremen to conduct the examination. They receive a small stock of worsted, selected at random, and often proceed to test the color perception by pulling out a single thread and asking the man to name the color. Even physicians often allow the candidates to critically compare the skeins, which in itself should be a sufficient indication of defect." In a report made by a committee of the British Ophthalmological Society appears the following: "Your committee becomes more and more convinced that a competent examiner is not made in a day or a month, and that even with large experience much judgment and capacity are needful to interpret rightly the acts of the examined."

A large percentage of the English roads have all their employes, even down to the section hands, examined by the company ophthalmologist. It would be extremely difficult for such a method to be carried out in the United States, owing to the length of many railroad systems, unless each division had its own ophthalmologist. From the present tendency* on the part of railway officials I am inclined to think that some such arrangement will be adopted in the future, which will be beneficial to all parties concerned.

### SHOULD OLD EMPLOYES REQUIRING GLASSES TO BRING THEIR VISION UP TO THE REQUIRED STANDARD BE RETAINED IN SERVICE, AND ALSO RETAIN THEIR GRADE IN LINE OF PROMOTION?

That several railway systems are in favor of glasses for the improvement and preservation of vision, as well as for protection of the eyes, is evident from the following extracts taken from the rules and regulations of one of the largest railroad systems of the world:

"When the distant vision of an employe can be improved by the aid of glasses, he should wear them, except yard brakemen, who are prohibited from doing so.

"All employes who require the aid of glasses for distant vision must wear them at all times when on duty, and must carry a duplicate pair for use in case of emergency, and will be examined with each pair.

"All employes excepting those indoors, who are permitted to wear glasses for distant vision, when on duty must wear the spectacle or automobile goggle form. There is no objection to the use of automobile goggles fitted with glass for the protection of the eyes in engine or freight train service. The use of amber glasses by firemen, as a guard against temporary fire blindness, is encouraged."

There is an objection made on some roads to employes retaining their grade in line of promotion, who need glasses to bring their vision up to the required standard, especially if their vision is below a certain grade. This objection being based upon the idea that if an accident happens to the glasses of such an individual he will be incapacitated.

He is required to carry two pair of glasses, and if his vision is by means of the glasses up to the required standard, I can see no valid reason why he should not be allowed to retain his grade in line of promotion, having earned same by dint of merit.

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*"Rule 13. Enginemen who have less than 20/30 vision in either eye, without glasses, must be examined by an expert or by an oculist designated by the company."

## VISUAL REQUIREMENTS OF UNITED STATES NAVY.

The usual requirements for the United States navy are 20/20 vision in each eye tested separately without glasses. Candidates otherwise physically sound are accepted with a minimum visual acuteness of 15/20. Color perception to be always carefully determined. The usual examination is by Holmgren's method. The examinations are made by medical officers of the United States navy.

For pilots, masters and mates of the marine service, the minimum visual capacity is 15/20 in both eyes, not including errors of refraction corrected by glasses. Any red or green color blindness discovered by the Holmgren test is cause for rejection. The examinations are made by the medical officers of the Public Health and Marine Hospital Service.

## VISUAL REQUIREMENTS OF NEW YORK CENTRAL RAILWAY SYSTEM.

### Standards of Visual Acuity.

### Indoor Tests.

| Class. | Entrance to Service. | Promotion. | Re-Examination. |
|---|---|---|---|
| Class A.<br>Enginemen, road service.<br>Hostlers who run on main track. | 20-20 combined, not less than 20-30 in either eye, without glasses. Must not accept a plus 2 D lens. | 20-20 combined and not less than 20-40 in either eye without glasses. | 20-20 combined, not less than 20-70 in either eye; or 20-30 combined, not less than 20-40 in either eye without glasses. See rules 8, 13, 14 and 16.* |
| Class B.<br>Enginemen, yard service.<br>Hostlers who do not run on main track. | | | 20-30 combined, not less than 20-50 in either eye without glasses. When combined vision without glasses is not less than 20-50 and neither eye less than 20-70 and by the aid of glasses combined vision can be brought to not less than 20-30, enginemen must wear glasses. See rules 8, 9, 10, 11, 13, 15 and 16.* |

| Class. | Entrance to Service. | Promotion. | Re-Examination. |
|---|---|---|---|
| Class C.<br>Firemen, Trainmen, Freight Brakemen, Yard Brakemen, Switchtenders. | 20-20 combined, and in each eye, tested separately, without glasses. Must not accept a plus 2 D lens. | 20-30 combined, not less than 20-40 in either eye, without glasses. | 20-30 combined, not less than 20-40 in either eye, with or without glasses, providing neither eye is less than 20-70 without glasses; or 20-20 in one eye and less than 20-70 or nil in the other, without glasses. See Rule 8.* (Yard Brakemen.) |
| Class D.<br>Passenger Conductors, Freight Conductors, Yardmasters, Yard Conductors, Train Baggagemen. | 20-20 combined, not less than 20-30 in either eye, without glasses. | 20-30 combined, not less than 20-40 in either eye without glasses. | 20-40 combined, not less than 20-50 in either eye, with or without glasses; 20-30 combined, not less than 20-70 in either eye, with or without glasses; or 20-20 in one eye and less than 20-70 or nil in the other without glasses. |
| Class E.<br>Station Agents, Telegraph Operators, Signal Foremen, Signalmen, Bridge Foremen, Track Foremen, Drawbridge Tenders, Car and Engine Inspectors. | 20-30 combined, not less than 20-40 in either eye, with or without glasses. | (See Rule 17.)* | 20-30 combined, not less than 20-70 in either eye, with or without glasses; or 20-30 in one eye and less than 20-70 or nil in the other without glasses. |
| Class F.<br>Crossing Flagmen and Gatemen. | 20-40 combined or not less than 20-50 in either eye without glasses. | (See Rule 17.)* | 20-50 combined, not less than 20-70 in either eye with or without glasses; or 20-40 in one eye and less than 20-70 or nil in the other without glasses. |

The following are the requirements for the field test:

### FIELD TESTS.†

| Class. | Without Glasses. | | With Glasses. |
|---|---|---|---|
| Class A.<br>Enginemen, road service. | By day sunlight. | 200, 400 and 2,600 feet. | 200, 400 and 5,000 feet. |
| | Or by day if cloudy with clear atmosphere. | 200, 400 and 2,000 feet. | 200, 400 and 4,000 feet. |
| | By night. | 200, 400 and 2,000 feet. | 200, 400 and 4,000 feet. |
| Class B.<br>Enginemen, yard service. | By day or night. | 200, 400 and 800 feet. | 200, 400 and 2,600 feet. |

*Rule 8. When the distant vision of an employe can be improved by the aid of glasses, he should wear them, except yard brakemen, who are prohibited from doing so.

Rule 9. All employes who require the aid of glasses for distant vision must wear them at all times when on duty and must carry a duplicate pair for use in case of emergency, and will be examined with each pair.

Rule 10. All employes, excepting those indoors, who are permitted to wear glasses for distant vision, when on duty, must use the spectacle or automobile goggle form. There is no objection to the use of automobile goggles fitted with glass for protection of the eyes in engine or freight train service. The use of amber glasses by firemen, as a guard against temporary fire blindness, is encouraged.

Rule 11. Glasses of all kinds must be approved by an oculist designated by the Company.

Rule 12. Applicants having a squint, or who are cross-eyed, will not be accepted. Examiners who suspect a case of double vision should use some simple test to determine its presence.

Rule 13. Enginemen who have less than 20/30 vision in either eye, without glasses, must be examined by an expert or by an oculist designated by the Company.

Rule 14. Enginemen in Class A, who fail to reach required standard, must be examined by a committee of two, appointed by the General Superintendent, and upon recommendation of this committee they may be permitted to wear glasses, provided their combined vision can be brought to 20/20; committee to recommend service to which they may be assigned.

Rule 15. Enginemen in Class B, whose vision without glasses is less than 20-50, and either eye less than 20-70, or nil, must be examined by a committee of two, appointed by the General Superintendent, and if the vision by the aid of glasses can be brought to 20-30, must wear glasses; committee to recommend service to which they may be assigned. See rules 13 and 16.

Rule 16. Enginemen having 20-20 vision in one eye and less than 20-70, or nil, in the other, must be examined by a committee of two, appointed by the General Superintendent; committee to recommend the service to which they may be assigned.

Rule 17. Where promotion standard is not specified, employes applying for transfer from one kind of service to another, or being promoted, must pass entrance examination of class they desire to enter, except that those who have been injured in service, or who have been in continuous service for at least two years, may be transferred to positions as hostlers, switch tenders and crossing flagmen; also from one position to another under Class E, upon passing the respective re-examination standards.

†Employes in Class A or B who are examined by a committee shall be given an outside or field test. A bracket pole with two dolls or two straight poles (spaced the same distance as dolls on the standard bracket pole), carrying four standard semaphore arms and lights will be used. A clear sky background, tests to be made standing.

In making the test candidates should approach the signals from a point where they are unable to see them and not be credited with being able to read the signals unless they can promptly call changes as made in position of arms and color of lights. The test with and without glasses should be made at distances varying from 5,000 to 200 feet.

### VISUAL REQUIREMENTS OF STREET RAILWAYS.

The Interborough Rapid Transit of New York requires 20/20 vision, and uses the Holmgren wool test and Williams' lantern test. The examination is made by the company surgeon, and "there is only one rule in force which is incontrovertible—that no man can be employed in any capacity who is either totally or partially color blind."

The Metropolitan Elevated Railway of Chicago requires 20/20 vision in each eye and employs the Holmgren wool test and a lantern test; the surgeon of the company makes the examination.

The Twin City Rapid Transit Company of Minneapolis, Minn., uses the Snellen test type at 20 feet, tests each eye separately, and less than 20/50 disqualifies. The Holmgren wool test is used for color blindness.

The Milwaukee Electric Railway and Light Company requires 20/20 vision in each eye for motormen with re-examination when promoted to interurban service. Conductors must have 20/20 in one eye and not less than 20/30 in the other; when re-examined for interurban service 20/30 in each eye is accepted. No re-examination is made, except as above stated, unless specific complaint is made. For the color test a card having various colored yarns upon it is used, and the men are required to name the colors. If they name these colors without any hesitation they are passed, if they hesitate they are given the Holmgren test. The examinations are made by the company surgeon.

### THE MINIMAL VISION REQUIRED BY DRIVERS OF AUTOMOBILES.

"A committee of the French Ophthalmological Society has recently reported on this question and suggested for discussion a recommendation that such be required to possess:

1. Vision in both eyes.
2. A minimum of visual acuity of 0.2 in each eye without correcting glasses.
3. A full field of vision, and perfect mobility of the eyes.

In discussing the recommendation, M. Morax says that some of his colleagues were disinclined to interfere with the liberty of the subject in this matter. He himself would grant that it could not be shown from the record of automobile accidents to what extent bad vision had contributed to their occurrence; nothing was said on the point. He would divide drivers into two classes: (1) Private owners who were their own drivers. (2) Drivers in the employ of transport companies. Those of the first class were probably always insured, and it rested with the insurance company to protect themselves; he believed the matter was being considered. The second class of drivers had to pass some examination before entering employment, and their opinion would be desired as to what test should be employed.

In order to obtain an unanimous recommendation, he would suggest the formula: The society considers that risks of accident arise from bad vision in drivers of automobiles.

M. Terrien suggested that: For the reduction of these risks drivers be required to possess the sight of both eyes, a full visual field and full mobility of eyes, while M. Sauvineau proposed the addition of the requirement: that in case of diminution of visual acuity the driver be required to possess a minimum of 1/2 for one eye and 1/4 for the other eye with correcting glasses."

*128 Wisconsin Street.*

# THE RELIEF OF GLAUCOMA THROUGH SUBCONJUNCTIVAL INJECTIONS OF SODIUM CITRATE.

Hayward G. Thomas, M. D., and Martin H. Fischer, M. D.,

Oakland, California.

We wish to discuss briefly in these paragraphs the clinical results that we have obtained in cases of glaucoma by the use of subconjunctival injections of sodium citrate solutions. As more than ten months have now elapsed since we first utilized this procedure for the relief of glaucoma, and as during these months we have found no bad results following the injections, and some decidedly good ones, we are anxious that other medical observers test this therapeutic procedure in order to obtain a correct estimate of its value.

The theoretical and experimental considerations which led to the conclusion that the subconjunctival injection of sodium citrate solution of proper concentration could do an eye no harm, and should lead to a decrease in the ocular tension, have been sufficiently discussed elsewhere.*

## METHODS.

After a number of preliminary tests, we chose sodium citrate as the salt best adapted for use in clinical cases of glaucoma. This salt ranks among the most powerful in decreasing the affinity of the ocular colloids for water, and not only does it not increase the tendency toward the formation of corneal opacities observed in most cases of glaucoma, but actually counteracts it.

We use only the chemically pure salt (Kahlbaum) in concentrations varying from 1/8 molecular to a 1/6 molecular solution. Expressed in per cent, the former of these is equivalent to a 4.05% solution, the latter to a 5.41% solution of the ordinary crystallized sodium citrate $Na^3C^6H^5O^7 + H_2O$. The 1/8 molecular sodium citrate solution has an osmotic concentration below that of the body fluids. The 1/6 molecular solution has an osmotic pressure slightly above that of the human tissue fluids.

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*See Martin H. Fischer: The Nature and the Cause of Edema, Journal of the American Medical Association, 1908, LI, p. 832. Ueber Augenquellung und das Wesen des Glaukoms. Vorlaefige Mittheilung, Pflueger's Archiv fuer die gesammte Physiologie, 1908, CXX¼, p. 396 and Zweite Mittheilung, ibid., 1909, CXXVII, p. 1.

The injections of sodium citrate solution are made in the usual manner, preceded by the use of cocain and adrenalin solutions. Enough of the sodium citrate solution is injected to gently distend the connective tissue spaces (5-15 drops).

Immediately following the injection the patient suffers some pain.. While this is usually insignificant, it is fairly severe in certain cases. When this is true, alternate hot and cold compresses laid over the eyes ease the pain. In any event it disappears in a few minutes.

In the severer cases of glaucoma we use the stronger sodium citrate solution; in the milder cases or for subsequent treatment the 1/8 molecular solution is sufficient. Still later a mixture of one part of the 1/8 molecular sodium citrate solution, with two to four parts of a physiological (0.9%) sodium chlorid solution, is sufficient.

## CLINICAL EXPERIENCES.

Our clinical results may be summed up as follows: We have seen during the past ten months five patients with glaucoma, in all, nine glaucomatous eyes.

Case 1 was that of a man with a double glaucoma of several years' standing. The left eye had gone blind, in spite of an iridectomy made a year previously. At the time we saw him both eyes showed a tension of + 3. A single subconjunctival injection of the 1/6 molecular solution of sodium citrate into the right eye was followed by a prompt (within five minutes) lowering of tension and a disappearance of the subjective symptoms of glaucoma. After three days the tension rose again and the injection was repeated. There again followed relief of symptoms for about ten days, and a third injection was deemed necessary. As the good effect of this injection began to wear off, the surgeon in charge of the case, feeling that this new method might be criticised, deemed an iridectomy advisable and made it.

Case 2. This concerned an Irish woman, almost blind with double cataract, who presented herself with glaucoma of the right eye. She had suffered persistently in this eye for a month when we first saw her, and attributed the development of her ocular symptoms to having knocked her eye against the corner of a sewing machine. After eserin and dionin solutions had proved of no value, we made a subconjunctival injection of a 1/6 molecular solution of sodium citrate. Immediate relief followed. These injections were repeated, at first thrice weekly, then twice weekly, and finally once a week, for some six weeks. The tension never rose to its original height after the first injection. For about four months the patient has now been free from glaucomatous symptoms.

Case 3. This woman's history of double glaucoma dates back five years. An iridectomy was done in the left eye two years ago, with temporary relief of symptoms. In spite of the operation, the eye has gone blind. During this time the right eye became affected, and she has suffered repeated attacks of pain in the eye, headache, and has observed spectral colors about lights. Examination revealed a constant increase in tension (T + 2), with very high tension at the time of attacks (T + 3), together with a steaminess of the cornea.

By the use of sodium citrate injections, repeated at weekly or bi-weekly intervals, this patient has been much improved. For three months she has been practically free from attacks.

Case 4 concerns an old man blind in both eyes from double glaucoma of eight years' standing. An iridectomy performed on the right eye did not save the eye either from blindness or the general symptoms of glaucoma. When first seen this patient had severe attacks of pain in both eyes weekly. Sodium citrate injections were in his case absolutely painless, and brought proper relief. Eight injections, given in the course of some six weeks, have improved this patient's general symptoms so markedly that for five months now he has not needed medical aid for his eyes.

Case 5. This patient, an old Portuguese woman, had a history of blindness, due to double glaucoma and cataract, which extended over a period of five years. She sought the clinic to be relieved of intense headaches and to have her sight restored. Injections of 1/6 and later 1/8 molecular sodium citrate solutions brought prompt relief of the headaches and a fall in ocular tension from + 3 to below normal. The good effect of these injections lasted from three to ten days, and at no time after the first injection did the tension rise to the original height. Inasmuch as her blindness was not being relieved, she stopped her visits to the clinic, and has been lost sight of.

### CONCLUDING REMARKS.

It is clearly apparent from the facts detailed above that *we have in the use of subconjunctival injections of sodium citrate solution a method by which we can at any time rapidly reduce the abnormal tension of an eye in a state of glaucoma.* But this fact must not lead one to conclude that we possess in this procedure a "cure" for glaucoma. Glaucoma is essentially an edema of the eyeball, and for its production we must hold responsible the same circumstances which are responsible for a state of edema in any other part of the body. According to the studies of one of us, edema represents nothing but a state in which the affinity of the tissue colloids for water is increased above that which we are pleased to call normal. This is brought about, in the main, through chemical changes in the tissues themselves, whereby substances, particularly acids, capable of increasing the affinity of the tissue colloids for water, are either produced abnormally in the tissues, or stored in excessive amounts. The various neutral salts are capable of counteracting the effect of acids in increasing the affinity of colloids for water, but some salts are much more powerful than others. Sodium citrate is among the most active in this regard and this constitutes one of the reasons for its choice in our clinical studies. A second reason is that this salt does not favor the formation of corneal opacities.

From these remarks it must at once become plain that a "cure" for glaucoma can be found only in those methods which aim to correct the condition originally responsible for the abnormal production or storage in the eye of those substances capable of increasing the affinity of the tissue colloids for water. If this production of acid is a consequence of a circulatory disturbance, or an infection, then, clearly, the correction of the circulatory disturbance, or the removal of the infection, can constitute the only logical "cure" for the glaucoma.

But even toward this end can these subconjunctival sodium citrate injections contribute. As the glaucoma develops the anterior chamber becomes progressively more shallow, and as the lens is pushed forward the blood vessels of the ciliary body become pinched. A deficient oxygen supply in certain tissues within the eye (with its associated production of acids) is, therefore, added to whatever factors are already active in increasing the affinity of the ocular colloids for water.* To be able to relieve the glaucoma, even temporarily, must, therefore, aid towards the restoration of normal conditions within the eye.

Recent literature on the subject of glaucoma calls attention to the frequent failure of iridectomy to permanently relieve glaucoma, and urges the treatment of cases with miotics and constitutional remedies. In that the sole object of treatment with miotics is a reduction of tension, we submit the subconjunctival injections of sodium citrate as a most powerful aid in this direction. These accomplish the result with a promptness not attained by any other procedure.

As will be reported in a later communication, one of use (Thomas) has found these injections valuable in other ocular conditions associated with a blood stasis, as in many cases of iritis (with slight increase in tension) and in cases of irido-cyclo-chorioiditis. Inasmuch as the ultimate relief, not only of glaucoma, but also of many other pathological eye conditions, is most favorably influenced by an adequate blood supply, it is clearly apparent that these subconjunctival injections which, through reducing the ocular tension not only to normal, but to even less than normal, allow of an increased flow of blood through the eye, must aid greatly in the restoration of normal function. Through sodium citrate injections that "lymphogogue" effect so earnestly sought in our text-book discussions is readily attained.

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*It is clearly apparent from these sentences that we do not consider the abolition of the "filtration angle" nearly so much the cause of glaucoma as one of its results.

# DO DISEASES OF THE ACCESSORY SINUSES CAUSE KERATITIS PARENCHYMATOSA?

EDWARD J. BERNSTEIN, M. D.,

KALAMAZOO, MICHIGAN.

The relation of the accessory sinuses to ophthalmology has been receiving such excellent treatment at the hands of so many competent observers that many mooted questions are now almost definitely settled. The monumental works of Onodi, of Zuckerkandl (*Annals of Otology, Rhinology and Laryngology*, March, 1908), Eversbush (*Graefe Saemisch Handbuch d. ges. Augenheilk.*), Holmes, and last, but by far not least, Hanau W. Loeb's articles in the *Annals of O. R. and L.* of the past year or so, make it unnecessary to go into any details concerning the casual relation of diseases of these cavities and many ocular diseases. A case in which I became very much interested as to the relationship of sinus disease and keratitis parenchymatosa, and which I shall detail, has led me into this inquiry.

I have been convinced for many years (vide article *Med. News*, March, 1893) that diseases of the nose bear a very definite relation to diseases of the eye. In common with many others, I never see a case of phlyctenular or ulcerative keratitis in any of its manifold forms without making a thorough examination of the nares, and often directing my treatment to these cavities. I make this statement especially forceful in reference to my conclusions as to the status of this part of the question, in the light of our present information.

In December, 1907, I saw a young lad, with Dr. E. P. Wilbur, whom he was treating for parenchymatous keratitis. He had had the case but a few weeks, and the boy was then approaching the climax of the trouble. His photophobia and pain were on the increase, in spite of all that was being done for him, viz.: atropin and dionin in ointment, locally, and syr. ferri iodid in large doses. The friends of the lad, becoming impatient, asked that I see the case in consultation.

I found a poorly developed, undersized boy of twelve, with every evidence of malnutrition as the result of inherited syphilis. There were scars at the angles of the mouth, a tiny nose with little or no bridge, and a general retarded facial development. His ocular condition showed involvement of the left cornea almost in its entirety with infiltration in the superficial and deep parenchyma. There was deep ciliary congestion and iris bombé (in the lower outer segment of the iris there was dark hematogenous discoloration and bulging). Photophobia was intense.

When pressed for etiology, we said it was most likely inherited specific trouble. This caused quite a cyclone, and the boy was sent to Chicago, where he consulted an eminent oculist, whose assistant, in his absence, pronounced the cause of the trouble to be nasal sinus empyema. The exact sinus involved was not mentioned.

I differed radically from this diagnosis for the following reasons: First, the boy bore every mark of hereditary syphilis; second, I never knew, nor was I then able to find any of authority who had seen non-suppurative keratitis caused by sinus troubles; third, according to those who had done anatomical or embryological work on the sinuses, they would scarcely be sufficiently developed at that age, more especially in one so markedly underdeveloped as this lad; fourth, when the sinuses can be demonstrated as standing in causal relation to an eye disease (except in case of the sphenoid sinus and optic nerve trouble, when contralateral involvement can exist), the disease should be *limited* to the *side lateral to the eye*. In this case the second eye was also involved; and, lastly, on eradication of sinus involvement, cure should be prompt. This case was not fully cured five months after he left us. The evidence in this case may, therefore, be discarded.

In order to discover if any one else had ever seen such relationship, I not only consulted the works of Hajek, Killian, Lambert, Lack, Turner, Eversbusch, Jansen, Luc, Fuchs and Michel, but addressed the following circular to every well-known American and many English, German, Austrian and French writers on these subjects. Many replied, and some of the replies are here appended:

"Dear Doctor:

"The relation between suppuration of the adjacent sinuses and deep ocular lesions, especially of the optic nerve, extraocular muscles, thrombosis, panophthalmitis, etc., is well established. Ziem and a few others maintain that iritis, keratitis, etc., may be produced by sinus suppuration. This is controverted by Kuhnt and others. I am interested in determining the relationship between the various forms of keratitis (especially the non-suppurative forms) and nasal disease. Will you please answer?

"Have you seen a keratitis as a result of nasal troubles, and how often?

"What forms of keratitis?

"What were the nasal lesions?

"How early in life do sinus suppurations affect ocular conditions, especially keratitis?

"When etiology of a nasal origin was established, was constitutional medication also applied?

"Did treatment of the nasal complication materially shorten time of disease?

"What was the average length of time of cure, and the extremes?"

To questions one and two, which were answered together, 26 answered either "No," or qualified it (Dr. Hotz and a few others said they had seen phlyctenular keratitis cause nasal troubles). Those answering negatively were Drs. Ray, Winder, Johnson, Amos, Savage, Spalding, Monosmith, Valk, Veasey, Chas. May, Nance, Lander, Fischel, Church, Keiper, Probst, Mortimer Frank, Griffin Lewis, Hubbard, Hubbel, Holinger, E. C. Greene, Melville Black, Callan, F. C. Hotz and Baker (Cleveland).

Thirty-seven answered "Yes," and designated the form of keratitis as either phlyctenular or ulcerative. These were Drs. L. Connor, Stirling, Gifford, Weeks, Westcott, de Schweinitz, Roy, John Greene, Jr., Lavall, Posey, McReynolds, Taylor, H. Woods, C. R. Holmes, Ellis, Wendell Reber, Foster, Tyler, Fox, Kollock, Kyle, Kirkpatrick, E. R. Lewis, Wuerdemann, E. J. Brown, H. H. Brown, Webster, Beck, Meierhof, Maitland Ramsay, Fuchs, Lang, Gunn, Logan Turner, Eversbusch and von Michel.

Prof. Fuchs' letter I give in full: "No keratitis occurs as a direct consequence of nasal disease. In an indirect way keratitis may supervene after exposure of the cornea from exophthalmos, etc. (I except herpes corneae occurring after acute nasal catarrh, complicated with fever, and those cases of trauma of the cornea complicated with dacryocystitis.)"

A. Maitland Ramsay wrote as follows: "With the exception of the nasal troubles so frequently seen in association with keratitis of strumous children, I am not aware that I have ever seen any form of inflammation of the cornea the result of suppuration of the sinuses adjacent to the eye." William Lang's reply was equally positive: "I don't remember associating any case of interstitial keratitis with nasal disease, but, of course, one sees a good many cases of specific interstitial keratitis that also have some nasal disease, but not standing in etiological relation."

Three answered that they had seen interstitial keratitis result from sinus suppuration, as follows: One, which was unsigned (postmarked Minneapolis), had occasionally seen interstitial keratitis result from sinus suppuration. Dr. Wolf Freudenthal recollected having operated on one patient for frontal sinus suppuration, whose keratitis improved after the operation, "but the ophthalmologists who saw the case claimed that the improvement was not due to the operation."

Dr. Brawley replied that he had seen two undoubted cases of interstitial keratitis with iritis; in one associated with anterior ethmoiditis, in the other with frontal and anterior ethmoidal infection. He also added that he had one case of *antrum abscess causing orbital abscess in a child of two years.*

Dr. Ellis reports in answer to question four: "I have seen children affected with sinus suppuration, one two years old." Dr. Hal Foster, in answer to this question, said his case was four years old. The form of corneal trouble was not mentioned. Drs. C. A. Holmes and Hanau Loeb were unable to say, and Dr. Logan Turner replied: "I have had no experience in the relation between sinus suppuration and keratitis. I think so-called cases of antral suppuration in young children are really cases of *osteomyelitis* of the *upper jawbone* from some septic cause." Dr. Iglauer said: "The earliest case in which I have diagnosed sinus suppuration was 18 years."

My own conclusions from my embryological work and anatomical work and from reading Zuckerkandl, Hajek, Luc, Killian and others, is that the last two observers express the facts.

Without going fully into the various types of the sinuses at the different ages, the complete development and anatomy of which will be found in Hajek, Kilian, Zuckerkandl and many other works, and, in the main all agreeing, the facts are these, taking the maxillary antrum as a type: The sinus is simply indicated at birth by a narrow sulcus in the middle meatus. After the eruption of the deciduous teeth the sulcus deepens slightly, but the body of the superior maxilla is still occupied *almost* entirely by the germs of the permanent teeth and the unabsorbed cancellous bone. After eruption of the permanent teeth, the sinus is a very small cavity still, and does not descend much below the middle of the inferior turbinated body. It is not fully developed until from the seventeenth to the twentieth year. Finally, while quite familiar with the routine examination of the adjacent sinuses, I am free to confess that I have never yet had a little patient under five years of age whose nares I could examine with sufficient accuracy to determine a definite sinus involvement. This is probably due to lack of skill on my part; if so, I admire the men who can.

Nothing really definite could be gotten from the answers to my other queries, except that most of those replying thought nasal treatment aided the cure of phlyctenular and ulcerative keratitis. I am very confident that at least four cases of superficial ulcerative keratitis got well entirely by the correction of an hypertrophy of the middle turbinate (partial ablation) in two cases, and by draining the anterior ethmoidal sinuses in the other two. I gave them absolutely nothing else but a little boric acid solution for the eye, and this as a placebo.

These patients were all over seventeen, and two of them had been under the care of other men (one for three months and the other for eight months). The treatment had been directed to the eyes alone. From the moment the nasal lesion was treated they made rapid recovery.

My conclusions, gathered from these studies and from my own experience, are as follows: As far as *corneal lesions* are concerned, it seems that all are *benefited by treatment* of any pathological condition of the nasal fossae or adnexa, just as the general health is helped by the eradication of such foci.

The phlyctenular keratitis is aggravated by the presence of adenoid or tonsillar hypertrophy, but so far as standing in the relationship of cause and effect, evidence seems to be against that. It is true that most children suffering with this form of keratitis are also of the lymphatic tendency, but so long as hundreds of children require operation for the diseased lymphoid glands without any evidence of corneal trouble, and so long as no one has yet treated phlyctenular keratitis by the nasal route alone, we are only warranted in saying that the two conditions exist side by side, and without doubt operation is indicated.

There is *no* doubt that some ulcers of the cornea *are* caused by intranasal suppuration or other nasal diseases; especially is this so when by any chance an erosion of the epithelial layer occurs. I do not mean to have it inferred that corneal ulcer always may be referred to the nose as the cause.

There is *every doubt* and *not the slightest scintilla* of reliable evidence that keratitis parenchymatosa is caused either by adenoids or suppuration of the adjacent nasal sinuses. Until some one can show at least one case where keratitis was cured in a shorter time than ordinarily (from 3 months to 18 or 20 months) by treating the nasal condition alone, and without any of the usually prescribed internal or external methods, just so long are we constrained to think such statements unworthy of scientific credence.

That all the knowledge we have shows that the sinuses are not fully developed until after puberty, is well established. Full development is not usually found until after the eighteenth year, though there may be cases in which very early development occurs. Certainly one would not look for such to occur in an undeveloped child at puberty.

That nasal suppuration in very young children is, as Dr. Logan Turner suggests, an osteomyelitis of the superior maxilla.

I should like to report that in the past year I have had two cases of interstitial keratitis in youths clear up, one in eight weeks and one in nine weeks, by the use of 5% dionin solution subconjunctivally injected, in conjunction with mercurial inunctions. Also a case of keratitis annularis in an adult, which yielded to subconjunctival injections of dionin rather more rapidly than I had reason to expect. I may say, in neither case was there any evidence of nasal trouble, and no treatment was given for that organ.

Finally, I wish to express my thanks to the many confreres who have helped me by their replies, realizing that most of those who did not respond had not the time or had no definite knowledge on the subject.

*Kalamazoo National Bank Building.*

# REPORT OF A CASE OF PARINAUD'S CONJUNCTIVITIS WITH UNUSUAL COMPLICATIONS.

Frederick Krauss, M. D.,

Philadelphia,

and

M. P. Boyle, M. D.,

Glenside, Pa.

Parinaud's disease remains one of the rarest and strangest diseases that we meet in ophthalmology. Scattered cases only have been reported in literature, and the etiology is still unknown. It is essentially a disease of the lymphatic system of the affected eye, probably invoked by a microbe of animal origin, which we are as yet unable to locate by the known stains.

The prominent symptoms of the disease are:

1. It is unilateral.
2. Granulomata and frequently ulcerated areas develop, mainly on the tarsal conjunctiva near the fornix.
3. The discharge from the conjunctiva is usually slight.
4. There is marked ptosis.
5. There is usually great involvement of the preauricular, submaxillary and other lymphatic glands of the neck.
6. All the bacteriologic examinations have so far proven negative.

In the cases reported by Krauss, a prominent feature was a well marked stillicidium without involvement of the lacrimal sac.

In the case which we now report there were several features that have been absent in the other accessible case reports.

When this case, a negro child of two and one-half years, was first seen, it had the appearance of an intense purulent conjunctivitis, limited to the right eye, with the exception that there was a marked enlargement of the preauricular, submaxillary and sublingual glands, limited to the right side.

There was a free purulent discharge. The lids were succulent, everted with difficulty, and had on the conjunctival surface numerous irregular ridges. As the disease progressed the ridges became more prominent, being outlined by a greyish ulceration running along their base. As these ulcerated areas spread they cut through the ridges, converting them into granulomatous masses.

As the swelling of the conjunctiva lessened, these masses were more pronounced and provided with a broad pedicle. About three weeks after the beginning of the disease, there was an extension of the inflammation to the lacrimal sac, with marked swelling and free purulent secretion extruding from the canaliculi by pressure upon the sac. It was also noted that the discharge could be pressed into the nose. In fact, there was a discharge of thin greenish pus from the right nostril. The latter persisted for over two weeks, when it disappeared. The lacrimal disease, however, persisted, but gradually improved with the conjunctival condition, for which reason the sac was not excised.

Frequent examinations by smear and culture, made by several independent pathologists, were bacteriologically negative.

A number of the granulomata assumed a large size, being 4x6 mm., with a narrower base.

The largest were excised and prepared for microscopic examination, but unfortunately mislaid. The greyish sloughing areas gradually disappeared, leaving the conjunctiva uniformly red and thickened. The unexcised granulomata disappeared as quickly as the thickened base of the excised areas. The enlargement of the lymph glands without undergoing suppuration lessened with the improvement of the eye condition.

To summarize the unusual features of this case we have.

1. The age of the patient, two and one-half years.
2. The color of the patient, only one other case having been reported, in a negro.
3. The extension of the disease into the lacrimal sac, causing purulent discharge from the nose.
4. The very free purulent secretion continuing for a considerable length of time.

5. The fact that the cultures were negative bacteriologically, the usual flora of the conjunctiva being present.

6. There was no history of tuberculosis, but there was a strongly marked reaction to Pirquet test.

## CASE REPORTED.

Lucy A. W., aged two and one-half years, colored, was seen by Dr. M. P. Boyle about March 10th, 1909, presenting the symptoms of catarrhal conjunctivitis, with slightly enlarged lymph glands on the affected side. After about two weeks the condition suddenly became worse, when the case was sent to the St. Christopher's Hospital for Children.

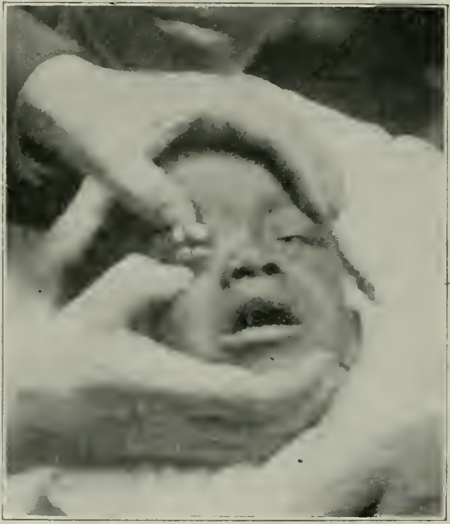


FIG. 1.—Parinaud's Conjunctivitis, Showing Granulomata.

When seen at St. Christopher's Hospital Dispensary, on March 23, 1909, there was a marked ptosis of the right lid with much inflammatory swelling. A free purulent discharge exuded when the lids were separated. The conjunctiva was thrown into numerous irregular folds. The cornea was clear. The preauricular, submaxillary and sublingual glands were enlarged. The left eye was normal.

The family history was negative regarding ocular disease and tuberculosis. There were four other children with normal eyes. The patient did not come into direct contact with horses, though his father was a teamster and had a stable near the house. The Pirquet reaction was strongly positive, but had no effect on the eye.

Bacteriologic examinations with smears and cultures were absolutely sterile, the normal conjunctival flora being absent.

On March 30, 1909, it was noticed that the lacrimal sac was swollen, and upon pressure much pus expressed into the conjunctival sac. Two days later there was a free discharge of pus from the nose. April 3rd, at the base of the ridges of conjunctiva were greyish-green areas of necrosis that could not be detached by severe rubbing with cotton on a probe.

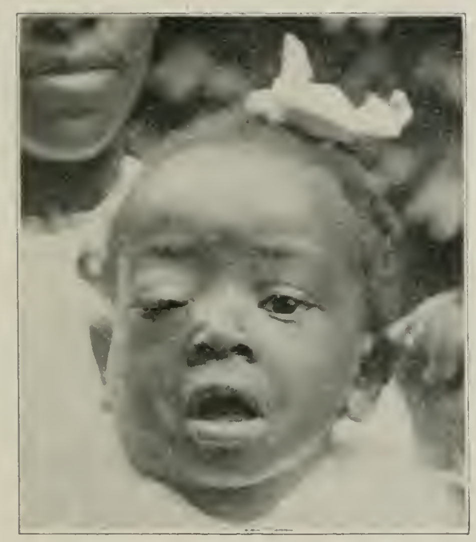


FIG. 2.—Parinaud's Conjunctivitis Showing Ptosis and Glandular Involvement.

April 10th, the ridges were being separated into granulomata by the extension of the necrotic areas. The lacrimal condition continued, though the nasal discharge had greatly lessened. Ptosis was complete.

May 10, 1909. The nasal discharge had ceased. The puruient discharge from the conjunctiva and lacrimal sac was much thinner.

May 18, 1909. Granulomata are becoming somewhat narrower at the base. Several of the largest ones, approximately 4 mm. by 6 mm., were excised. Discharge same. The swelling of the conjunctiva was less and the necrosed areas had disappeared.

June 15, 1909. The discharge from the conjunctiva and the lacrimal sac was much less watery. Glandular involvement very tender and limited to the right side.

September 9, 1909. The granulomata were now quite small. Discharge very slight except watery fluid expressed from sac.

October 2, 1909. The glandular enlargement was still easily perceptible. The ptosis had nearly disappeared. There was a marked thickening remaining in the fornix. A few drops of lacrimal secretion could be expressed, but the improvement seemed to be continuous, though very slow.

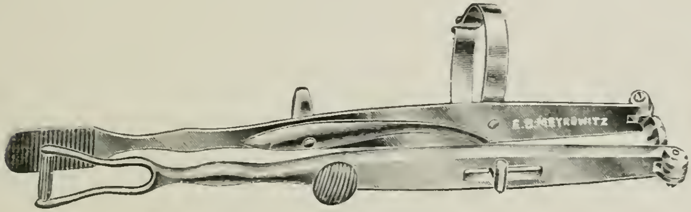
The treatment adopted and carried on persistently by us consisted of cleansing with boric acid solution at frequent intervals. Daily application of nitrate of silver two per cent neutralized immediately. Frequent applications of argyrol, and tonic treatment internally. The major portion of the granulation was excised.

# MODIFIED KNAPP ROLLER FOR EXPRESSION IN TRACHOMA.

W. Norton Whitney, M. D.,

Tokyo, Japan.

In this modification of Knapp's most useful forceps one of the rollers is replaced by a flat washboard-like terminal, over which the remaining roller is made to pass, so that the fold of conjunctiva between these two surfaces can be subjected to the necessary pressure without pulling or stretching it unduly. This motion is obtained by means of a double hinge at the end furthest from the roller. The pieces of this end, which are usually welded together, are, in the modified form, separated by a piece of metal three-eighths of an inch long, which is connected by hinged points with the arms of the forceps.



Modified Knapp Roller.

The forceps are held in the operator's hand somewhat as a penholder is held when writing. A ring in the upper roller arm for the index finger and a little boss on the lower or flat terminal arm enable the operator to keep the instrument steady.

The instrument has been in use in the Alasaka Hospital for several years, and was presented to the profession at the annual meeting of the Japan Ophthalmological Society in April of this year. It was devised by the writer, and for certain forms of trachoma is considered a useful instrument.

(The instrument will be made in this country by E. B. Meyrowitz, 104 East Twenty-third street, New York City.—Ed.)

# ABSTRACTS FROM ENGLISH OPHTHALMIC LITERATURE.

## (UNITED STATES OF AMERICA.)

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### A Spontaneous Serous Cyst Floating Free in the Anterior Chamber.

ROY, J. N., Montreal, Canada (*Ophthalmology*, October, 1909), reports the following case: On December 6, 1906, Miss L., age 21, came to the clinic complaining of ocular fatigue and of inferior vision in the right eye. Examination showed the presence of a small cyst in the anterior chamber, not perfectly round, measuring 2 1/2 mm. by 1 1/2 mm., transparent, with a grayish capsule, dotted with pigment spots, and traversed by small muscular fibres. The cyst had no pedicle, but was entirely free to move about in the anterior chamber. The aqueous was clear and the iris was normal. The lens was transparent and the anterior lens capsule had no pigmented areas. Otherwise the eyes were entirely normal.

No history could be given, except that one morning, eight years before, she noticed it for the first time. It had not changed in shape nor size and had never given any pain. Probably the cyst had sprung from the posterior surface of the iris or from the ciliary body, and that its pedicle had broken away from its point of attachment, allowing the cyst to float into the anterior chamber. A. F. A.

### A Modification of the Usual Method of Dividing Strictures of the Canaliculi and Lacrimal Ducts: Modification of Dr. Agnew's Canaliculus Knife.

WANDLESS', HENRY W., New York (*Ophthalmic Record,* September, 1909), modification of Dr. Agnew's knife consists in making the blade shorter and narrower. The shank is of flexible metal, so as to fit any case. The objects of the modified procedure are to avoid permanent destruction of the lacrimal sac, to avoid the deformity caused by cutting through the lower portion of the internal angle of the eye, and also the unnecessary slitting of the lacrimal duct and of the canaliculus. The shank of the knife is curved, so that the cutting edge is on the convexity instead of on the concavity. At its introduction the punctum is entered, the handle held horizontally, and the cutting edge directed down and away from the margin of the lid. It is then advanced toward the sac, and at the same time lifted up, pressing hard against the covering of the canaliculus. When the probe point of the knife is felt against the nasal bone the handle is raised to the perpendicular, but before being rotated is made to descend into the sac. It is then rotated, carrying the cutting edge to the posterior, in which position it is pushed through the lacrimal duct. Its withdrawal is effected in the same manner as its introduction. O. W.

### Nodular Opacities of the Cornea.

ZENTMAYER, W., Philadelphia, Pa. (*Ophthalmology,* July, 1909). In 1890 Groenouw described a variety of subepithelial degeneration which, as modified by subsequent reports, may be described as follows: A number of small opaque patches of all shapes occupy the most central portion of the cornea, while between and sometimes reaching out to the periphery are innumerable very fine dots. The patches are grayish and subconjunctival, and later become elevated. Commonly there is no irritation. The disease is intractable, and in the course of time the opacities become denser and the vision sinks. The disease is extremely rare, and occurs more frequently in young adult males, and is said to be a family disease. The condition is one of degeneration and not of inflammation. Zentmayer's case is as follows: M. K., age 24, had general poor health during childhood. The eye trouble began at 14, with slight irritation, lacrimation, redness, and failing vision. Examination of the lungs and tuberculosis tests gave evidence of the tubercular infection. The corneal opacities corresponded with the above description and the pathological examination showed the nodules to be in a more or less degenerative, hyaline condition. The eyes did not improve under treatment.

A. F. A.

### Nodular Opacities of the Cornea.

Green, John, St. Louis, Mo. (*Journal American Medical Society*, September 18, 1909), reports the following case: R. V. O., age 27, male, married, stated that his mother died of tuberculosis of the lungs when he was ten years old. At about that time he suffered a fall, which was followed for seven years by recurrent swellings about the hips and gluteal region. Since then he has been entirely well. Physical examination showed sound heart and lungs and typical tubercular cutaneous scars at the site of the former sores. About three years ago he suffered from a slight irritation of the eyes, and the vision became impaired. There had never been any true inflammatory signs. There was no conjunctival or ciliary congestion. Both corneae presented several ill-defined grayish masses in the pupillary area. Bearing in mind the clear tubercular family history and the unquestioned tubercular nature of the old cutaneous lesions, it was decided to try the diagnostic injection of tuberculin, which gave a very distinct reaction. Later small doses of tuberculin were given for some time, with marked improvement in the appearance of the opacities and with increase of vision. The statistics of the few reported cases are presented and the symptomatology and differential diagnosis, as given by different authors, are carefully arranged. A full account of the histology is given. The case reported suggests tubercular infection as an important factor in the etiology of these cases. A. F. A.

### Regeneration of the Cornea.

Wiener, Meyer, St. Louis, Mo. (*Journal American Medical Association*, September 4, 1909), claims that it has been known since the time of the earliest ophthalmologists that the cornea would regenerate. As early as 1842 experiments were undertaken to demonstrate that healing took place without the formation of a scar, but the first systematic research for actual proof that corneal regeneration took place was made by F. C. Donders in 1846. He conducted a series of experiments on rabbits by resecting a flap of cornea from one-third to two-thirds of its thickness, including one-half of its area or more. In 1873, Reich conducted experiments along the same lines. The few clinically reported cases of regeneration, except one, followed destruction of corneal tissue from purulent ophthalmia. In July, 1908, Wiener began a similar series of experiments. In each case a flap of cornea was dissected away, varying from one-half to two-thirds of its thickness, and including from one-half to the whole of the cornea, the extent of surface bared seeming to have little or no influence on the general healing process. Except for some slight conjunctival injection within the first twenty-four hours there was very little reaction, the epithelium closed over the denuded surface, and the cornea gradually cleared until about four to six weeks after the operation, when the opacity could be seen only by means of oblique illumination. Several months later the corneae generally became perfectly clear. A. F. A.

### Staining of the Conjunctiva.

Nascher, J. L.( *New York Medical Journal*, August 7, 1909), reports the case of a boy 12 years old who stained his conjunctivae and developed a mild conjunctivitis with a copying pencil. The discoloration of the conjunctiva gradually disappeared in three days. The only treatment was frequent washing with warm water. M. L. F.

### Metastatic Gonorrheal Conjunctivitis.

McKee, Hanford, Montreal, Canada (*Ophthalmology*, July, 1909), recognizes two distinct forms of gonorrheal infection of the conjunctiva, (1) that produced by direct transfer, and (2) that caused by internal or metastatic means. The etiology of the second form has been the subject of much speculation and discussion. Most of the bacteriological examinations have been negative. If this condition is not due to direct infection of the gonococcus, to what is it due? There are three theories to answer this question. 1. That it is due to the action of the gonotoxin on the conjunctival tissue. 2. That it is due to mixed infection. 3. That the infection is a true metastasis by the blood. Mr. E. B., 19 years, had been treated for gonorrhea for some months, but had spent the fourth night before the consultation in sexual excess. The next day the eyes became uncomfortable and were bloodshot, conditions which became more pronounced until the call was made. The eyes were painful; there was no swelling of the lids, but a very slight chemosis of the bulbar conjunctiva of the right eye. Intense congestion of both the palpebral and the bulbar conjunctiva was present, though a ring about the corneo-sclerotic margin was of normal color. There was a profuse mucopurulent discharge. The next day the left big toe became swollen and painful. Other joints soon became inflamed until a typical picture of gonorrheal rheumatism was presented. A urethral discharge had been present for three months, but it stopped when the inflammation of the eye began. The eyes soon improved, together with the joint pains. A month later both eyes and joints became inflamed again in the same manner, but the inflammation soon subsided. When the patient was first seen eighteen slides were prepared and examined, one after the other, before the last one showed the Gram negative diplococci. Tubes of media were examined, and in a tube of hemoglobin agar a profuse growth was found after twenty-four hours. It proved to be the bacillus xerosis. In the midst of this growth two colonies of Gram negative diplococci were found. Blood cultures were taken upon two occasions. The first was negative. The second, taken when the systemic infection was most marked, showed the Gram negative diplococcus. The differentiation from the other similar diplococci must be very carefully made. A search through a series of sections of the conjunctiva for microorganisms gave negative results. A. F. A.

### Etiology of Iritis.

JENNINGS, CHARLES W., and HILL, EMERY, Philadelphia, Pa. (*Ophthalmology*, October, 1909). The report of five hundred cases of non-traumatic iritis at the Wills Eye Hospital shows that the three principal causes were syphilis, 307 cases or 61%; rheumatism, 127 cases or 25%; gonorrhea, 26 cases or 5.2%; influenza, 7 or 1.4%; exposure, 7 or 1.4%; tuberculosis, 6 or 1.2 per cent; malaria, 6 or 1.2%. Of the whole number, syphilis, rheumatism and gonorrhea caused 92%. Of the syphilitic cases, 234 were men, 73 women; 14 occurred under twenty years of age, 119 between twenty-one and thirty years, 85 between thirty-one and forty years, 45 between forty-one and fifty, and 21 over fifty years. The iritis occurred within one year of the chancre in 52 cases, and was coincident with various secondary lesions in 56 cases, this coinciding with the commonly accepted view that syphilitic iritis is a secondary rather than a tertiary manifestation of the disease. In only 46 cases had there been a previous attack of iritis. Rheumatism was the cause of over twenty-five per cent of the cases. These figures agree with other statistics. Age seemed to have no relation to the disease. Recurrences were noted in seventy cases, presenting a striking contrast to the smaller number of recurrences in syphilis. The iritis was coincident with the rheumatism in 22 cases, while in 65 iritis followed the rheumatism at intervals of from a few months to 30 years. Of the 26 cases of gonorrheal iritis, ten had no articular rheumatism. The iritis existed at the time of the urethritis in three cases and the interval between the two diseases varied from a month to 18 years. Eight of the 26 cases gave a history of 14 previous attacks of iritis. In no case did a recurrence of urethritis accompany a recurrence of iritis. A. F. A.

### Tubercular Irido-Cyclitis.

STIRLING, J. W., Montreal, Canada (*Ophthalmology*, July, 1909), reports a case as follows: Mrs. G., 38, weaver. She was poorly nourished and gave a rather unfavorable family history, several having died of tuberculosis. There was no physical evidence of disease found on examination at this time. Six weeks previously the right eye became inflamed, but was not painful. The cornea was steamy and semi-opaque, there was a slight hypopyon, the details of the iris were indistinct and a marked pericorneal injection was present. The hypopyon increased, the corneal opacity became denser, the vision became reduced to movements of the hand at three feet. Tension was — 1. The morning temperature was 98 degrees or less, the evening temperature 99-99.2 degrees. The eye became steadily worse until two and one-half months later, when she consented to an operation. The anterior chamber was opened and the hypopyon was removed in mass. Very rapid and marked improvement in her ocular and general condition followed. The pathological examination of the hypopyon mass showed that the structure consisted of two forms of cells. A stroma of connective tissue outlined the lower portion of the anterior chamber with quantities of white blood cells interspersed. At one end these formed definite tubercles. No bacilli were found. Ten months later she reported that the eye had been quiescent, except for occasional inflammatory attacks, which slowly subsided, leaving the vision poorer each time. Now the left eye went through much the same course of inflammation, and soon five nodules appeared in succession on the iris. Physical examination at this time revealed evidence of chronic infiltration over the right apex. 1-2000 of a mg. of old tuberculin was injected and repeated with improvement in her condition for six months. The diagnosis was made only after the pathological examination, the opacity of the cornea preventing examination of the iris. Even when the cornea is clear the tubercular nodules may not be seen, owing to their minute size and because a layer of exudate on the iris may hide them. Again, cases have been reported in which the iritis was of a serous or plastic type, which recovered, but on recurrence the typical tubercles appeared. Small doses of tuberculin seem to be indicated, the amount to be gradually increased until tubercular immunity is produced. A. F. A.

### Metastatic Carcinoma of the Chorioid.

SUKER, GEORGE F., and GROSVENOR, LORENZO N., Chicago, Ill. (*Ophthalmology*, July, 1909), state that there are only 64 recorded cases of this disease. It does not occur before the age of puberty, but usually between the ages of 30 and 60 years. The iris and ciliary body are seldom involved, and then only by direct extension or by tertiary metastasis from the chorioidal carcinoma. A primary carcinoma of the endocular tunics has never been seen, for the reason that within the globe there are no histologic cells in which a carcinoma per se could originate. Per contra, a metastatic intraocular sarcoma is just as rare as a primary carcinoma. The carcinomic metastasis, by preference, invades the chorioid and is brought there as a cardiac embolus. It reaches the temporal region of the eye by way of the posterior ciliary arteries principally. There is no authentic case on record in which the metastasis entered the eye by way of the arteria centralis retinae. This metastasis remains in general closely confined to the first ocular tissue invaded. With a primary metastasis in the chorioid, the iris and ciliary body are most frequently involved by extension or invasion, and not by secondary or tertiary metastatic foci. The metastasis in the chorioid assumes the characteristics of the primary growth, though there is a great tendency to have the three types of carcinoma represented in the same individual tumor. This fact is particularly exemplified in a recorded metastasis from the liver to the chorioid, in which the chorioidal tumor showed the typical liver cells, alveolar and biliary pigment cells being observed. The breast seems to be the usual seat of the primary carcinoma, and the uterus appears in none of the recorded cases as the primary seat of the disease, contrary to what might have been expected. The tumor cells force their way within the meshes of the chorioid and the tumor is seldom thicker than 2 or 3 mm. at the center, tapering off toward the periphery. Tumor cells are seldom seen in the retina and vitreous. They often penetrate the sclera, but seldom perforate it. These tendencies are directly opposite to those of sarcoma. The retina becomes totally detached, except at the disk and ora serrata. With the ophthalmoscope, at the beginning, there is a yellowish or grayish-white reflex at the site of the tumor, but soon all details are lost, owing to vitreous disturbances and extensive retinal detachments. The growth usually stops at the edge of the disk, although the nerve may be partly or entirely replaced by the new growth, even as far back as the chiasm. The tension is more likely to be minus with carcinoma than with sarcoma. Although both eyes are likely to become involved, they do not become so simultaneously, and not from metastasis from one eye to the other, but in each case from the primary lesion. The rapid loss of vision is largely due to the early and extensive retinal detachments. This detachment is due to interference with the chorioidal circulation, secretion of an albuminous fluid from the carcinomic cells and pressure on the immediate structures, with shrinking and degeneration of the vitreous. The disease is prone to involve the nerve vessels, and numerous areas of necrosis and hemorrhages are found. The prognosis is absolutely bad, the patient usually succumbs within six or eight months after the first eye symptoms of carcinoma are manifested. A justification for an enucleation does not exist for carcinoma of the chorioid, as it does for sarcoma, because the former is never primary in the chorioid, and its presence implies a more or less general systemic involvement, whereas sarcoma is often primary in that location. A. F. A.

### A Case of Congenital Coralliform Cataract of Both Eyes.

Kipp, Charles J. (*The American Journal of Ophthalmology*, August, 1909), reports a case of congenital coralliform cataract of both eyes in a boy, age 10 years. The family history was negative. The patient was four and one-half feet high, weighed 53 pounds, and otherwise was in normal condition. His vision was 6/60 in both eyes with the pupils dilated, and he had never seen any better. No abnormality was present in either eye, except in the lens, which presented the following conditions: The anterior capsule was transparent. An opaque core 1 mm. in diameter extended nearly through the entire thickness of the lens, and from this, opaque spokes radiated throughout its whole length in all directions, ending in trumpet-shaped enlargements, some thicker than others. Between these spokes were to be seen numerous glistening silver points. None of the spokes reached the periphery of the lens, so that a zone 2 mm. in width remained clear, the pupil being widely dilated.

On March 20th, 1909, Kipp needled the cataract in the left eye, and by July 10th the lens matter was all absorbed. On April 16th, he needled the one in the right eye with an equally good result. The final vision was O. D. w+1.5 D. = 6/8; O. S. w + 1.5 D. = 6/8; + 5 D. was prescribed for reading. G. H. W.

### Experience in the Expression of Cataracts in the Capsule by the Smith Method.

Green, D. W., Dayton, Ohio (*Journal American Medical Association*, September 4, 1909), claims that no operation or combination of operations for the removal of cataract offers such a complete and satisfactory disposal of the capsule as the Smith operation. Long ago Knapp called attention to the fact that iridectomy alone was a comparatively safe procedure, but opening the capsule and removing the lens added new elements of danger. These elements consisted of the mechanical irritation of the lens debris to the cut and torn surface of the iris. Some writers have regarded this irritation as due to infection, others to the irritation of the chemically altered lens substance. Whatever may be the true theory, delivery of the lens in its capsule offers immunity from these dangers, to a large extent. The percentage of success in the Smith operation depends very largely on the attainment of a high degree of skill, technical knowledge and the imitative faculty. The Smith operation is especially applicable to the removal of immature cataracts, for which the regular method is not favorable. Hypermature cataracts, owing to their soft, milky cortex, often fluid vitreous and strong zonula, offer many difficulties to extraction in the regular way, but seem particularly suitable for this method. Statistics seem to show that the danger of loss of vitreous is comparatively slight, but surely the comparative freedom from inflammation and high-class visual results count for more than slight loss. Probably the loss of vitreous would be lessened if the patient, during the delivery of the lens, would look, not downward, but straight ahead. The manipulation over the lower third of the lens, by which it is dislocated, has been the most difficult step to imitate. The operator should make light or moderate pressure to and fro over the lower third of the lens with the tip of the strabismus hook; then with moderate pressure with the small end of the spatula applied edgewise across the lower sclerocorneal border the lens will advance still further toward the incision, the zonula will give way, and the top of the lens will often tilt slightly backward. If the pressure is continued around the lower border of the lens, and the tip of the hook inserted under the lens, the intraocular pressure will aid in causing the lens, which is now anchored above, to describe a half circle. The wound will gap, and the lens will emerge bottom edge upward, leaving only a small band of zonula to be loosened. This must be done slowly and with the most careful manipulation by drawing it back and forth through the incision. Otherwise the capsule will rupture and recede into the eye.

In more than half the cases the lens has been delivered in this way, and seldom has vitreous been lost. Since he has made more pressure with the tip of the spatula and done less rubbing over the lower third of the lens, the number of cases of keratitis has markedly diminished, and he has not seen that condition remain and lower vision. The usual after-dressing is applied, and the eye should not be opened for three or four days, unless the patient complains of pain, which is seldom the case. As a rule, vision is not high at first, but it reaches its best in from one to two months. For the sake of comparison of the two methods a table is presented showing that the average vision by the old method, of 72 cases, was 20/27, and by the Smith method, for 75 cases, was 20/40.

A. F. A.

### The Expression of Cataract in Its Capsule.

Wuerdemann, H. V., Seattle, Wash. (*Journal American Medical Association,* September 4, 1909), claims that the method of the Smith operation, with its details, has been known and described by many operators for a long time. The use of the large squint hook for delivery of the lens is a minor and useful adjunct which has been successfully used many times. Smith's new spoon is very like the old spoon of Pagenstecher; comparison of the two will not show any appreciable difference. In fact, "Pagenstecher's operation is quite the same as Smith's." Wuerdemann's experience has shown that the 2/5 sclerocorneal section with conjunctival flap, combined with a very small iridectomy and extraction of the lens, is the only all-round satisfactory operation. The absence of details, i. e., the least handling of the eye, and the fewest instruments possible, is the characteristic of the operation of the extraction in the capsule. It is no operation for a beginner nor for the average operator. A stop speculum should not be used, on account of the ever-present danger of prolapse of vitreous. The lid-holder of William Fisher keeps the patient's upper lid under control. The eye is fixed by catch forceps, the knife is entered, and a corneoscleral section is made with a conjunctival flap. A very small iridectomy is made and the bend of a large hook is pressed moderately, slowly and continuously on the cornea at the lower edge of the lens, that, tilted backward, slowly enters the wound, the pressure relaxing as the body of the lens emerges, followed by the hook. The flat spoon may be used to assist the lens to slide out of the eye by offering an inclined and smooth plane for it to glide on. The conjunctival flap and the iris are stroked into place, the lids closed and a bandage applied. The author's expression cases are comparatively few, but compare very favorably with those done by the reguuar method. A. F. A.

### The Expression of Cataract in Its Capsule.

Wuerdemann, H. V., Seattle, Wash. (*Ophthalmology*, October, 1909), says that although Smith has reported an experience of 17,000 extractions in the capsule among his Indian patients, still we must rely to a large extent upon the ultimate results of the operation upon patients of our own race and climatic conditions before passing judgment upon it as the preferable operation for the removal of the cataractous lens. If the dread of remote complications is relieved by further experience it will seem to be well adapted for practically all forms of uncomplicated cataracts, the exceptions being the traumatic, infantile, adolescent and hypermature forms. It seems to be preferable for immature or slowly progressing lenticular opacities, for by this method there is none of the delay and loss incident to the slow ripening of the lens. Also, all secondary operations are generally avoided. The immediate removal of all the obstructions to vision, the absence of postoperative inflammation and, above all, the greater proportion of high-grade results in visual acuity, neutralize the hypothetic fear of loss of vitreous.

A. F. A.

### A New Method for Detaching the Cataract in Its Capsule.

Savage, G. C., Nashville, Tenn. (*Journal American Medical Association*, October 9, 1909), claims that although Pagenstecher's comment concerning Major Smith's method of extracting the cataractous lens in its capsule, that it is "the best operation in the world," commends itself to very many operators as correct, still the amount of traumatism connected with it would prevent it from ever becoming universal. To minimize this difficulty, Savage has devised an instrument for detaching the capsule from its ligament and removing it with its enclosed lens. A cut of the instrument and a description of it make its use clear. It is somewhat like an ordinary squint hook in general shape, but with a curve on the shank next to the angle corresponding to and carefully following the radial curve of the anterior surface of the lens, and also a curve on the hook corresponding to the peripheral curve of the edge of the lens, both together enabling the operator to apply the hook and adjacent curved shank exactly in contact with the rim and anterior surface of the lens. The method of operation with this detacher is new in essential particulars. (1) The operation is done under complete anesthesia. (2) The eye is fixed by grasping the tendon of the internus. (3) After the usual incision, with iridectomy if necessary, the detacher is inserted between the iris and the lens, with the hook in contact with the lens and parallel to its lower edge, while the radial curve of the shank rests on the lens at the outer side of, but parallel to, the vertical meridian of the lens, half way between its center and its margin. The vertical curve is made to press against the lens so as to rotate it on its vertical diameter, pressing its temporal edge backward, the nasal edge rotating forward to the same extent. This movement generally tears loose the lateral portions of the ligament over more than two quadrants, leaving intact some of the fibers above and below. The instrument and lens are now returned to the previous or normal position and the horizontal curve is made to gently crowd the lower edge of the lens backward, the upper edge advancing accordingly. This motion generally tears loose the remaining fibers of the ligament. (4) The lens in its capsule now being free from its attachments, the instrument is withdrawn and the lens is delivered by external pressure in the usual way, the globe still being held by the tendon-grasp. (6) When the lens presents, the counter pressure should cease and the lens be gently transfixed from behind by the cystotome and gently lifted out, thus minimizing the amount of further external pressure on the lower part of the cornea. The after-treatment is such as is general after the usual operations. A. F. A.

### Capsule Forceps in Cataract Extraction.

TOOKE, FREDERICK, Montreal, Canada (*Ophthalmology,* October, 1909). The special technic in the use of forceps in cataract extraction is as follows: After the incision has been made and the iridectomy performed, the tips of the forceps are introduced, closed, into the anterior chamber as far as the lower edge of the pupil. The blades are then opened, gently pressed against the anterior surface of the capsule and closed, catching the membrane between the sharp teeth of the tips. The first rent is made by a gentle to and fro motion and the tear is continued upward as the forceps are withdrawn. After the torn fragment is removed from the eye no postoperative cataract or capsule shreds remain about the pupillary area requiring subsequent discission, the whole cortex is likely to be extracted, fewer lens fibers are retained in the chamber, and a great deal of the post-operative toilet of the wound to remove particles from the lips of the incision is unnecessary. By the older method of using the cystotome, some shreds of capsule very frequently found their way between the lips of the wound and primary union was occasionally not only delayed, but often prevented. By the removal of the fragment of capsule with the forceps primary healing is almost assured, and subsequent loss of aqueous by an involuntary spasm of coughing or sneezing is seldom met with. The healing of the wound of incision is complete throughout the thickness of the cornea, whereas, if shreds of capsule or iris or membrane become entangled in the wound, it becomes closed only through a part of its thickness. A. F. A.

### Analyses of the Ash of the Normal and the Cataractous Lens.

BURGE, W. E. (*Archives of Ophthalmology,* September, 1909), summarizes the results of his analysis as follows: 1. There is a decrease of potassium in the cataractous lens from 38.8% of the ash in the normal to 9.8% in cataract. 2. The calcium in the cataractous lens increases from an almost negligible quantity in the normal to 12.5% in cataract. 3. There is an increase in the magnesium in the cataractous lens obtained in the United States from 1.20% as estimated in the pig's lens to 8.00%. This increase is, therefore, not so marked as the increase in the calcium. 4. Assuming that the sodium in the normal pig lens is about the same in quantity as the sodium in the normal human lens, then the increase in sodium is practically of the same extent as the decrease in the potassium, the sodium increasing from 6.67% in the normal to 25.06% in the cataractous condition. 5. The lenses obtained from India differ from those obtained from the United States in that they contain a large amount of calcium, potassium and possibly sodium silicate, and fail to show any increase in the percentage of magnesium in the ash.

H. G. G.

### The Operative Treatment of Glaucoma by Cyclodialysis.

Knapp, Arnold, New York (*Journal American Medical Association,* September 4, 1909), describes the operation of cyclodialysis as performed by making an incision in the sclera 6 to 8 mm. posterior to the sclerocorneal junction and with a bent spatula separating the ciliary body from the overlying sclera and breaking through the pectinate ligament. A quadrant of the iris periphery is then detached. Out of eighteen cases operated on the operation failed in congenital glaucoma in one case, in glaucoma secondary to neuroretinitis with endarteritis and hemorrhages in one case, and was partly successful in two cases of chronic glaucoma. These were all cases selected to test the value of its operation, in which an iridectomy had been done with no permanent benefit, or in which much benefit could not be expected from an iridectomy. Of these cases the tension was reduced in eleven. In the remainder the eye again became hard. The operation is much easier than a correct iridectomy. The operation did not aggravate the condition except for a macular hemorrhage in one case, and attacks of acute glaucoma in two. No vitreous disturbance or detachment of the chorioid were noticed. The operation was repeated in three cases with benefit. The operation cannot in any way replace the classical operation of iridectomy in incipient cases of chronic glaucoma, but seems to be indicated in advanced cases of chronic glaucoma, especially those in which iridectomy has not succeeded in reducing the tension.

A. F. A.

### Eye Changes in Chronic Lead Poisoning.

Alexander, E. W., San Francisco, Cal. (*Ophthalmology,* July, 1909), says that reports of eye complications in chronic lead poisoning are very uncommon. In such cases the ophthalmoscope shows that the most common fundus changes are hyperemia of the disk, 11% ; papillitis, 30% ; choked disk, 8% ; neuroretinitis, 12% ; partial or complete post-neuritic atrophy, 29% ; negative, 10%. He reports the following case: The patient, 43 years of age, married seventeen years, three healthy children, a painter twenty-two years, of good habits and good family history, stated that five years ago he was taken sick with the classical symptoms of lead poisoning. His vision became so much impaired that he could not recognize his wife and relatives, and then gradually improved until at the end of thirteen months he had recovered, though he had occasional attacks of colic, diarrhea and constipation alternating, and loss of several molar teeth. Examination showed vision considerably reduced, media clear, no optic-nerve atrophy, though there were evidences of a former neuritis, retinal arteries slightly thickened and tortuous, marked bilateral chorio-retinal degeneration in the circumference and extending toward the ciliary region, some small patches in the macula, irregular contracted field for form and color, small central scotoma in the mid-field. This case probably has a degeneration of the chorio-capillaris, due to endovasculitis obliterans. It involves the weakest part of the circulation, at the junction of the posterior and anterior ciliary arteries. J. H. Parsons says that the process in the chorioid is characterized by a proliferation of the endothelium and new formation of connective tissue, especially elastic tissue, in irregular knobs and plates, which eventually completely obliterate the lumen.

A. F. A.

### Clinical and Pathological Study of a Case of Transferred Ophthalmitis.

Oliver, Charles A., Philadelphia, Pa. (*Ophthalmology*, July, 1909), reports the following case: On the 25th of November, 1907, a 37-year-old machinist was admitted to the hospital, having been struck in the right eye by a piece of steel half an hour previously. There was a small, jagged wound in the inferior temporal quadrant of the eyeball, through which some blood and vitreous were oozing. Vision was reduced to light perception. The parts were cleansed, atropin was instilled and a minute piece of steel was removed through the original wound of entrance by the hand magnet. A compress bandage was applied and treatment continued. One week later the wound was healed, and in three weeks the injured eye was practically well, and the fellow eye normal in every respect. He was discharged with a two-grain solution of atropin to be used twice daily and told to do no work, protect the eye and to report frequently. He was not heard from for two months, when he returned with pain in the same eye. It was very tender to the touch, showed intense ciliary injection, and the media were so hazy that only a faint red reflex could be seen. The left eye was irritable, vision lowered, accommodation disturbed, media hazy and the fundus indistinct. There was no injection and the eyeball was not tender. The offending eye was removed; giving instant relief and allowing the fellow eye to return to its normal condition and function. Examination of the removed eye showed the corneal layers intact, connective tissue proliferation in the posterior layers, the epithelium degenerated and covered by a granular exudate, a shrunken granular deposit in the anterior chamber, the iris and ciliary bodies atrophic, the lens cataractous with the capsule detached, the retina detached and folded, the chorioid and the optic nerve atrophic, the vitreous completely organized. The case is of interest, showing the transferrence from the injured eye to the other, in spite of the immediate removal of the foreign body, the non-involvement of the ciliary region, continued treatment, the early recognition of the transferrence, the devastation of the anterior segment of the eye and the disintegrative process of the deeper parts, the atrophy of the optic nerve, and the prompt recovery after the removal of the offending eye.

A. F. A.

### A Standard Test-Object for Determining the Near Point and the Range of Accommodation.

DUANE, ALEXANDER, New York (*Ophthalmic Record*, July, 1909), referring to the lack of, and necessity for, a standard test-object for measuring the accommodation, describes one which he has invented. It is a disk 38 mm. in diameter, covered with black velvet, mounted in a ring, and furnished with a handle, both of which are also blackened. On the centre of the disk is a white card, 3 mm. by 1.25, which is exactly divided by an engraved black line 3 mm. long and 0.2 mm.

thick. The test is used with a Prince's rule, which should have a dull dark surface. The card is carried back and forth until the engraved line blurs and clears so as to determine the precise point at which the blurring begins. The test should be made by daylight, and with one eye covered, and the patient seated with his back to a window. Dazzling light should be avoided. O. W.

### Should We Operate in High Degrees of Myopia?

WYLER, JESSE S., Cincinnati, Ohio (*Ophthalmic Record,* August, 1909), was led to consider this subject by a patient who had, himself, proposed the operation and requested that it be performed on him. He had been for years growing more near-sighted, and was wearing —18.0, both eyes, but was unable to see fine work. After reviewing the various operations for the removal of the lens, the writer says the advantages to be gained from a successful operation are: 1. Relief from glasses. 2. Increase in visual acuity. 3. Cessation in the progression of the myopia. 4. Lessening the dangers of amotio retinae, retinal hemorrhage and chorioidal changes.

Of the disadvantages, glaucoma follows in some cases, and causes grievous results, but the most serious is detachment of the retina. He quotes extensively from the literature on the subject, and concludes by saying that the following indications alone seem to warrant the procedure:

1. A myopia of at least 14 dioptres.

2. Degeneration of the fundus should not be very far advanced, or the vitreous greatly diseased.

3. If the patient can follow his occupation without discomfort, nothing should be done. It is only in cases where the visual acuity is so diminished that the myope cannot continue at his work that interference is justifiable.

4. Patients over forty should not be operated on unless it is absolutely imperative, for needling and linear extraction will not meet the requirements after this age, and simple extraction in a high myope is difficult and dangerous.

O. W.

### Amblyopia Ex Anopsia.

BRADBURNE, A. ALISON, Southport, Eng. (*Ophthalmology,* July, 1909), is of the opinion that the degree of amblyopia varies with the amount of refractive error, the duration of the condition and the intelligence of the individual. In a great majority of cases the defective eye is of no practical value for any accurate functioning. Generally the condition may be differentiated from congenital amblyopia by the presence of a central scotoma in from 60 to 90 per cent of the cases of the congenital form. The function at fault is that associated with the recognition of letters, words and figures, and, as this is the function of either the cones of the retina or of the visual perceptive centers in the brain, this defect must be situated in one or the other of these places. It is generally considered that the cones are at fault, although the analogy of letter blindness to word blindness would lead one to think it a brain defect in both cases. The author is inclined to think that in many cases, at least, the defect is in the brain rather than in the eye. In testing cases of amblyopia with the perimeter not only is no central blind spot found, but the smallest of the letters are seen over exactly the same area as the largest. The only difference which exists is the fact that the larger markings are correctly recognized and named, while the smaller are seen as marks only. Tests with the perimeter demonstrate that letters 10 mm. and 3 mm. in size are seen over exactly the same field, and, further, that there is very little difference in the visual area between a normal eye and an amblyopic one. If the cones were at fault, one would expect to find not only a proportionately much smaller visual field than in the normal eye, but a difference dependent on the size of the letter used as a test object. Again, the person under examination gives a ready but mistaken answer in naming the letters, whatever the size, much as a child does who is learning his letters, and in children we do not attribute their ignorance to a retinal defect, but to lack of mental training. These arguments seem to show that, as the smaller letters are seen, but not recognized, there must be two visual centers—one associated with the purely visual act of perception, and the other having to do with higher function associated with vision. Henschen locates the first, connected with the macular vision, in and around the anterior extremity of the calcarine fissure, this subserving vision in its most primary sense, a purely perceptive part of the visuo-sensory area. The second center he locates in the angular or angulo-occipital region, subserving the function connected with the recognition of words, letters or numbers, which he calls the higher visual center. Natural objects are perceived through the function of the first or lower macular cortical area, but without any recognition of their significance. Such perception does not invoke concrete ideas, such visual ideas being the outcome of the higher visual center. During the process of training these cases we note that a certain interval of time elapses before the recognition of a letter takes place.. That the image of the letter is not delayed after its impact on the cones can be proved by the readiness with which the letter is seen as a mark, but its intelligent response depends upon the working of sluggish cerebral centers, hence explaining the very evident delay between the actual vision of the letter and its correct interpretation. This supports the theory that the defect is cerebral and not retinal. Another argument which seems to tell against the theory that the retinal cones are at fault is that were such the case an almost complete recovery would ensue from the constant wearing of correcting lenses alone, which is not the fact. Recovery does not occur unless special efforts are made by the patient to train his defective visual powers. The very fact that mental effort is necessary confirms the theory of a lesion of a cerebral nature. If the cause is a cerebral defect it offers a more favorable prognosis, and more hopeful results may be obtained from treatment than if it were due to a retinal defect alone, as little can be done to improve the retinal condition. The treatment must be educational. The vision of the good eye, from which the patient has heretofore received his impressions, must be completely eliminated by occlusion. When the dormant faculty in the visual center is once aroused the improvement is fairly rapid, and the next difficulty to overcome is the tendency which is present in the good eye to take up the function of seeing on behalf of the other, as soon as the eyes are employed again. Persistent use of the amblyoscope will often accomplish this result. Electrical treatment has in some hands been reported as beneficial. A. F. A.

### Principles Underlying the Operative Treatment of Strabismus.

Jackson, Edward, Denver, (*The Journal of the American Medical Association*, January 2, 1909), reviews in detail the different operative procedures followed in strabismus, with reasons for choice of the different methods. He says that the ocular movements are executed and controlled by nerve impulses, originated and guided by visual impressions. When these nerve impulses are faulty and cannot otherwise be sufficiently modified to produce normal movements, readjustment by operative procedure may be resorted to. This adjustment may be accomplished: 1. By giving greater effect to certain impulses, advancing the insertion of the muscle. 2. By diminishing the effect of certain impulses through tenotomy, setting back the insertion of the muscle. 3. By transforming the impulses so that they will produce results different from those to which they were originally directed, lateral displacement of insertions. 4. By combining two or more of these changes. Tenotomy allows retraction of the tenotomized muscle and also retraction of its opponent, which is no longer resisted. The increase of power secured by muscular advancement may be temporary or illusory. Only modified nerve impulses are required to increase or diminish the power of any muscle. All muscles, temporarily suspending function from operation, are followed by degenerative changes in the muscle substance.

An operation on a muscle should be undertaken only after consideration of all the movements in which it takes part, either as a primary or secondary rotator of the eyeball. The most important object in the treatment of strabismus is to bring about a muscular equilibrium. Static equilibrium, so that muscular rest will leave the two eyes fixing the same point in a central position; and dynamic equilibrium, balanced movements, easy binocular fixation of greatest usefulness around this central point. A less important object is to obtain movements, from this central point, of greatest range and with the least expenditure of effort. Where these objects are not attainable by increasing the power of a certain muscle or muscles they are to be sought by diminishing the power of opposing muscles or by transference of muscular power from one movement to another. G. H. W.

### The Restoration of Vision in Strabismus.

Bradburne, A. Alison, Southport, Eng. (*Ophthalmology*, July, 1909), says that modern treatment of squint recognizes the facts that defective cerebral function has much to do with the development of this condition; that to cure it the fusion faculty requires cultivation; and the restoration of the normal alignment of the eyes is but a portion of the treatment which squint requires. The presence of a squint nearly always indicates (1) some error of refraction, (2) a defect in fusion sense, (3) a defect in the vision of the squinting eye. Glasses correct the error of refraction; operation or muscle exercises remedy the faulty position; training with the amblyoscope overcomes the cerebral defect unless of too long standing. The age limit has been set at six years, though some cases are not hopeless long after that age. The method of treatment with the amblyoscope undertakes to train the defective eye to recognize small figures, to interpret them in each eye independently and simultaneously, and later to unite them in stereoscopic vision. The secret of success lies in the ability to cultivate the fusing faculty of the brain. A. F. A.

### The Genesis of Conjugate Deviation of the Eyes.

Ronne, Henning, Copenhagen, Denmark (*Ophthalmology,* October, 1909), says that it is a general law that the cortical centers of the brain lie together according to physiological, not anatomical, principles. Therefore it is not very probable that the innervation would start from both hemispheres independently of each other. The only natural interpretation of this complicated innervation is that the impulses for movement and inhibition originate at the same place, probably at the innervation center of the intended movement. Sherrington proved this experimentally, and thus we arrive by an entirely different way at the result, that it is a physiological necessity to assume an inhibitory impulse started from the same place as the movement, viz., from the place the lesion of which produces the deviation. The fact that the deviation is sometimes very marked in comparison with the paralysis seems to justify the idea that there are two paths, one of innervation and one of inhibition, relatively independent of each other. A lesion at the center, therefore, would not only cause loss of tonus of the muscle, but would relax the inhibition of its antagonist. Thus the conclusion seems justified that the so-called paralytic conjugate deviation should be attributed to a cessation of an inhibition of the center of the antagonists, originating in the destroyed center. A. F. A.

### Oculomotor Paralysis Accompanied by Facial Palsy, Neuroparalytic Keratitis and Hemiplegia.

CHANCE, BURTON, Philadelphia (*American Journal of Medical Sciences,* August, 1909), cites the following case: A negro woman, age 30, reported to him on August 24th, 1905, complaining of a sudden closure of the left eye. The history she gave was of an inflammation of the left eye for six weeks, the lid falling over the eye and obstructing the sight during the last two weeks. She had been married eight years, had been pregnant once six years before. Two days before term she fell downstairs and gave birth to a dead baby. Specific history was denied. She had good health up to March, 1905, when she began to have violent pains in the head. In July the left eye became inflamed, but was not painful. Her left brow and cheek was discolored and near the outer edge of the orbit there was a large circular maculation, resulting from long-continued blistering. Left ptosis was complete, with facial palsy. When the lid was raised the eyeball was seen to be rotated outward; it was injected and the epithelium of the cornea was macerated and steamy over the entire surface, the summit edematous and infiltrated, staining with fluorescin. The iris and fundus could not be seen. The patient was put on increasing doses of potassic iodid with atropin in oil locally. Two days later the periphery of the cornea cleared and the ulcerated part was sharply defined. Two days later there was a slight movement of the lid on forcible effort. By September 21st the eyeball was still divergent, facial paralysis was complete, and the region supplied by the superior and inferior maxillary branches of the fifth nerve was anesthetic. About this time the patient was seized with a severe headache during the night and in the morning had paralysis of the left arm and leg. A diagnosis of cerebral syphilis was made. On October 24th the atropin was discontinued, and on November 11th the mixed treatment, which had been given for three weeks, was stopped and mercurial ointment substituted. By November 28th signs of ptyalism had appeared and all medication was stopped. Toward the end of December the patient could with an effort bring the globe to the vertical line; during this effort the palpebral fissure widened so as to completely expose the eyeball. About this time muscular power began to return in the face, arm and leg. On January 5th the cornea again became denuded, but had recovered by the end of the month. From this time on the improvement was marked until the ptosis had almost entirely disappeared, the patient could walk with comfort and the mental condition had improved. The patient was not seen from this time until January, 1909. During the interim she had been able to do her work, though when tired she had attacks of headache, and a feeling as of pins and needles in her left arm and leg. She still had diplopia, even in the primary position, the false image being to the left and up. At rest there was partial ptosis, but by wrinkling the brow she could draw the lid up to the limbus. There was paralysis of the superior and inferior recti and of the oblique muscles. There was no accommodation power in the eye, the pupil was irregular and fixed, the fundus normal, and the media clear. The face had regained its mobility, though the left side of the face was anesthetic. The hemiplegia had almost entirely disappeared. G. H. W.

### Ophthalmoplegic Migraine Involving the Abducens Nerve, With the Report of a Case.

Veasey, C. A., Spokane, Washington (*Ophthalmic Record,* August, 1909), after referring to the infrequency of ophthalmoplegic migraine affecting any but the muscles supplied by the third nerve, reports a case of a girl six years old who suffered from recurrent paresis of the left external rectus after violent attacks of headache, which had begun in her fourth year, and had increased in frequency. The patient was first seen on June 1, 1907, after an unusually violent attack, followed by vomiting and retching, a few days previously, which resulted in diplopia. Examination showed an external squint of the left eye, due to an almost complete paralysis of the external rectus. After ten days the paresis disappeared; and glasses were prescribed for correction of the error of refraction. Under treatment the frequency of the migrainous attacks lessened, but in October, 1907, there were three very severe attacks within ten days, all on the left side, the last followed by paresis of the external rectus, which lasted for three weeks. The patient then passed from under observation. The symptoms of this affection are of two periods, pain and paralysis. The pain is usually quite sudden and confined to one side. Its duration is variable, and may be terminated by vomiting, after which the paralysis appears. This in most cases is confined to the oculomotor nerve, is usually complete, causing internal and external ophthalmoplegia. The duration of the paralysis is also variable, but after several attacks it may become permanent.

O. W.

### Roentgen-Ray Flashes or Intermittent X-Ray in the Treatment of Eye Diseases, With Report of Cases.

COOVER, DAVID H., Denver, (*Ophthalmic Record,* July 1909), remarks that the application of the X-ray in various eye diseases will be its chief therapeutic value, and that its use in the early stages of many supposedly incurable diseases of the eyes will prevent the processes which lead to total loss of vision. Quoting from Cook, of New York, who has experimented extensively with the X-ray, he says: "If a cataract approaching maturity was exposed to the continual rays, an ephemeral stimulation and improvement in vision was sooner or later followed by ripening through hyperstimulation or irritation. This discovery led to a technic for maturing cataract for extraction." While the writer has had no experience with it in incipient cataract, he has found its effects very beneficial in other diseased conditions of the eye, and reports five illustrative cases; but his experiments have been made with the flashes, the action of which, he says, is very different from that of the continuous rays, i. e., more lasting, and not leading to later degeneration, as has been reported of cases in which blindness and deafness have followed a prolonged treatment with the continuous ray for recurrent cancer close to the eye and ear. Roentgen-ray flashes are made by an apparatus designed for that purpose. It consists of a small motor, a condenser, and a moving shaft. From forty to six hundred flashes can be given per minute, but in eye conditions the best results are obtained by the minimum number of flashes, seventy-five to one hundred and fifty per minute. O. W.

### On the Value of Ophthalmo-Reaction to Tuberculin.

ZIMMERMANN, CHARLES, Milwaukee, Wis. (*Ophthalmology,* October, 1909), explains the phenomenon that the instillation of tuberculin on the conjunctiva or on any place of the surface of the body causes a reaction as follows: The tubercular bacilli within the body produce a toxin which incites the cells to formation of antisubstances. The more toxin is introduced the more antitoxin is produced and the greater is the affinity of the cells to the toxin. If an inundation of toxin takes place at any point and from any source the local cells and then the free cells of the blood and lymph will gather from all sides to assist in neutralizing the toxin. Thus the local inflammation is established. Ophthalmo-reaction, compared with other local reactions as to clinical value, cannot be considered as absolutely reliable, and its employment requires certain conditions. For example, Baldwin, as the result of 1,087 tests, says: Fully 70% of persons who have been healed in the clinical sense from two to thirty years reacted positively. About 95% of patients with tuberculosis of the lungs give a positive reaction, but negative reaction does not absolutely speak against tuberculosis, since 50% of S. Cohn's patients affected with severe phthisis did not react. Out of 1,500 cases, collected by Krause and Hertel from literature, tuberculosis patients reacted in 80%, suspected in 50%, free from tuberculosis in 40%. Again, if tuberculin has been used elsewhere for diagnostic or therapeutic purposes, the ophthalmo-reaction cannot be applied. Most observers give the preference to the subcutaneous method, because it acts more certainly and eventually determines, through local action, the tuberculous character of a suspected eye infection and bad complications have not been observed, in spite of high temperatures. Damages not only to inflamed but to healthy eyes have been reported many times. In view of these considerations, the ophthalmo-reaction cannot be recommended, and if the subcutaneous injection of tuberculin is not desirable, the subcutaneous method of von Pirquet may be tried. The negative reaction to Pirquet's test, if repeated a second time, with pure tuberculin, occurs only in people perfectly free from tuberculosis. This test is so delicate that a positive reaction apparently indicates every focus of tuberculosis, even the most harmless, and therefore is not sufficient for the diagnosis of active tuberculosis. To determine this, the subcutaneous injection is necessary.

A. F. A.

### Alterations in the Color Felds in Cases of Brain Tumor.

Bordley, James, Jr., and Cushing, Harvey (*Archives of Ophthalmology,* September, 1909), both review the study of fifty-six cases and illustrate their paper with charts of various fields of vision, with the following conclusions: The data derived from the fifty-six cases they consider of especial value, owing to the observation of special precautions. The figures relate to the conditions which were present at the time of the first examination, often before the diagnosis of brain tumor had been certified:

| | Cases. |
|---|---|
| 1. Interlacing of color lines the predominant feature | 25 |
| 2. Color inversion the predominant feature | 9 |
| 3. Hemiachromatopsia without corresponding change in form field | 4 |
| 4. Islands of blue blindness (scotomata) | 3 |
| 5. Blue blindness | 3 |
| 6. Complete green blindness | 1 |
| 7. Complete achromatopsia | 5 |
| 8. No color change whatsoever | 6 |

The striking features were: (1) The fact that in many of the charts the fields for form were unchanged, while there was a very definite change in the fields for color. Fifty out of the fifty-six cases showed color changes; only eighteen showed definite form changes. (2) In four of the cases in which the colors interlaced tumors were found, though there was no choked disk. (3) In forty-one out of forty-two cases examined subsequent to operation, whether palliative or radical, the color lines became restored to their normal relative position. (4) The dyschromatopsia seemed to depend in some fashion upon an increase of intracranial tension, the relief of which usually caused its early subsidence, and it is possible, therefore, that it may characterize organic lesions other than tumor.

H. G. G.

### An Analytic Criticism on the Cardinal Lid Symptoms in Exophthalmic Goitre. (Basedow's Disease.)

SUKER, GEORGE F., Chicago, Ill. (*Ophthalmic Record*, July, 1909), finds the cause of the different lid symptoms difficult to explain on account of their dependence on each other. Some assert that exophthalmos is present in every case. Others consider that the vascular congestion in the orbit and lid muscles is an etiologic factor; and, again, that the thyeroid toxin exerts a strong influence on the central nerve centers, while others attribute both the lid symptoms and the disease itself to a central nerve lesion. The eye symptoms in this disease may be divided into three classes: Palpebral symptoms, ocular and ocular muscle symptoms, and intraocular symptoms, including fundus changes. Of these, the first and second serve for diagnosis, the third are dependent upon lesions other than those of the disease. After enumerating the cardinal lid symptoms the writer says that the epiphora in Basedow's disease is closely associated with the exophthalmos, and concludes from his own observation that all the lid symptoms, as well as the Moebius' sign, are accentuated by the exophthalmos, which, while it does not cause any of them, adds to their intensity, and is present in about 80 per cent of all cases. Its appearance is variable, and its persistence is due to the vasomotor paralysis of the orbital vessels. von Graefe's sign, the most complex symptom, is present in from 15 to 65 per cent of the cases, and is characterized by the moderate encroachment of the lid on the cornea, jerky downward rotation, tardiness in following that of the globe and jerky upward rotation in advance of the globe.

Stellwag's sign, the most insignificant lid symptom, is, to the writer's mind, the most difficult one to explain satisfactorily. This incomplete and infrequent winking has been attributed to corneal anesthesia, but some authorities, including the writer, consider both the Stellwag and the Dalrymple signs as one symptom. The Dalrymple sign, an increased palpebral aperture, depending on a tonic muscular contraction, is of all the lid signs the most deceptive and the hardest to define, on account of the difficulty of establishing a normal lid aperture for any given individual. Gifford's sign, difficult eversion of the upper lid, has the same basis as those mentioned above. It is due to increased muscle tonus, and probably to a shortened conjunctival fascia. Suker's sign is a combined lid and eye symptom, shown when, upon downward rotation of the globe, the lower lid is gently fixed while the patient is requested to rapidly rotate the globe upward and gentle retraction is made on the lower lid; the globe ascends in an unsteady manner, as the upper lid does in the von Graefe's symptom. O. W.

### The Adverse Influence of Diabetes in Certain Operations on the Eye.

Bull, Charles Stedman, New York, (*Medical Record,* October 2, 1909), refers to the bad results often following eye operations in diabetic patients, and remarks that he has studied these patients, before and after operation, and still doubts the wisdom of operative procedure in such cases. General surgical operations are unsatisfactory in these patients because the sugar in the blood is hygroscopic, and draws the water from the tissues of the body, thus interfering with the repair process. While the majority of authors are in favor of deferring operative procedure until analysis has proved that sugar is no longer present in the urine, the fact is, it is not the sugar, but rather the amount of acetone, diacetic acid, and beta-oxybutyric acid present, which gives the best idea of the condition of the patient. In the opinion of the writer, diabetes is frequently associated with arteriosclerosis and tuberculosis; and an analysis of one hundred and fifteen cases operated on leads him to the conclusion that diseases which are directly due to diabetes should be differentiated from those which occur independently of it; that the abnormal products of acids, or of metabolism, should be eliminated before operating; that arteriosclerosis is an important factor in the disease; that prognosis depends on the degree of toxic acid; and that the connection between diabetes and tuberculosis should be thoroughly investigated in order that a positive opinion may be formulated. O. W.

### The Requirements and the Regulation of Signaling by Color.

Oliver, Charles A., Philadelphia, Pa. (*Ophthalmology,* October, 1909), says that the importance of accurate color-vision in railway and marine transportation service, army signaling, and geodetic survey work renders it imperative that the testing of color vision should be conducted under such conditions as would be similar to those under which the examinee would work and that the colors selected should be of a standard and unmistakable character. For the practical recognition of color perception, the direct comparison of pigment colors by the wools of Wilson and Holmgren is probably the best. For the testing of distance perception of color, to obtain the different percentages of light stimulus and to simulate as closely as possible the varying condition of weather and atmosphere, signal colors as near in size and illumination as those in common use and exposed at a sufficiently great distance are necessary. All employes should be systematically and periodically re-examined and particularly so after every severe injury or attack of illness, or if it be found by careful inspection that any are using toxic agents, like tobacco and alcohol. All this can be most satisfactorily arranged only by an international commission. A. F. A.

### An Ophthalmological Phase of the Dangers of Consanguineous Marriages.

Posey, W. Campbell, and Sautter, Albert C., Philadelphia (*Ophthalmic Record,* September, 1909), calls the attention of the profession to the evidence afforded by ophthalmology to the dangers of consanguineous marriages.

Liebreich, fifty years ago, discovered that there was an association between the marriage of relatives and retinitis pigmentosa, a disease of the retina which does not yield to treatment, and generally ends in almost total blindness. Statistics show that 25 per cent of all cases of this disease occur in the marriage of relatives. In the last census of the United States there were 56,507 blind in the population, and in 2,527 of these cases the parents were cousins, 4.5 per cent. Physicians diagnosing this condition should make known to those afflicted with it the probability of its transmission to future generations; and students in medicine should be informed of the dangers of consanguineous marriages, that in the future practice of their profession they may be able to counsel laymen. O. W.

# ABSTRACTS FROM ENGLISH OPHTHALMIC LITERATURE.

(GREAT BRITAIN AND THE ENGLISH COLONIES.)

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## The Etiology of Trachoma.

Prof. Dr. R. Greeff, after stating his belief that trachoma is a specific infective disease, speaks of the barrenness of definite results obtained from exhaustive research during the past fifteen years. The author had given up all hopes of ever discovering the microbe of trachoma. All investigators found themselves in a position to say, "It is certain that with the known methods, it will never be possible to determine these microbes. It is useless to continue work."

After the discovery by Schaudinn of the spirochaeta pallida, the microbe of syphilis, together the new staining methods of Levaditi, Romansky, and Giemsa, the author was lèd to renew his search. Together with other investigators he found organisms belonging to the spirochaeta family, not only in trachoma, but on any mucous surface that had been irritable for any length of time—conjunctiva, mouth or the sexual organs, but they were only saprophytes. By using the Giemsa method of staining, the author was able to obtain a certain characteristic result in trachoma in every case. In describing them the author says: "The bodies I found were very regular, round, cellular inclusions, which were much smaller than the smallest known coccus. They stain intensively, sometimes violet, sometimes reddish or blue, with Giemsa diluted with aniline stains, and not at all with Gram. They are surrounded by a distinct, clear zone. With the strongest powers of the microscope, one observes that they are not quite round, but a little oval or grouped in pairs or in masses. If intracellular, they lie close to the nucleus."

The formations are found in the epithelium, in the discharge, and in the pressed-out follicles. Investigation by Halberstadter and Prowazek found the same bodies in trachoma in Java that have been observed in Germany. Prowazek calls the formations clamydozoa (i. e., organisms with mantles). But as some of the granules lying intracellularly in masses are not completely surrounded by a mantle, the name is not yet acceptable. The author first called the formations "double bodies," because of the tendency to lie in pairs. But as this name is not suited to all conditoins, he has selected the name "trachoma bodies."

Eight figures are given, showing double bodies in the protoplasm, two granules showing a clear zone; the plastin clots of Prowazek, and the massed form of trachoma bodies, the latter the most frequent and the easiest to recognize in the specimens.

"The massed form is of irregular shape, at times oval, at times rounded, in the beginning very small, but gradually growing until it takes the form and the appearance of a raspberry." While some of the bodies are surrounded by a clear mantle, in others it is incomplete or absent. The mantle being characteristic of one stage only. The granules may be free between the cells, and in the discharge where they are seen congregating in large numbers.

The secretion of the conjunctival sac is taken in the customary manner with a platinum loop and smeared on the cover, either by superficially scraping the epithelium with the edge of the cover glass or with a scarificator.

"The preparation is allowed to dry in the air, then fix for twenty to thirty minutes in absolute alcohol. It is then allowed to float for from six to nine hours (if possible at a temperature of about 37° C.), with the smeared side down, upon the staining fluid, which is a mixture of 12 parts of Giemsa's eosin solution (2.5 ccm. of the French 1% eosin solution in 500 ccm. of distilled water), 3 parts of azur II. (0.8 to 1.000).

The author believes trachoma to involve more than the epithelial cells, for the following reasons:

"1. We know, clinically, that the trachomatous process goes very deeply into the tissues, intruding even into the tarsus, and, finally, destroying it.

2. As I observed in cases in which the trachoma bodies are frequent, they absolutely disappeared from the surface after a few days of treatment. But they reappear immediately if the treatment is stopped. This proves, I believe, that although they were absent from the surface, they still remained in the tissue itself, making their reappearance on the surface again and causing a relapse.

3. I succeeded in finding the granules in the pressed-out follicles. But by this method the material is always contaminated by the surface cells. Therefore I gave the task of obtaining the bodies in sections to an Italian physician, Dr. di Santo, working in my laboratory at the time, and he succeeded, so that now, through his work, we are able to localize the bodies. We do not see them in the epithelium alone, but also in the subepithelial tissue, in the lymph spaces beneath it, in the cells of the follicles (the lymphoid and the so-called Leber's cells) and between the cells.

After so many failures and incorrect reports concerning the causative agent of trachoma, questions constantly arose in my mind concerning my own discovery. I kept it, therefore, to myself for a long time.

First, it was necessary to prove that these formations were found only in cases of trachoma and in no other disease of the conjunctiva. This has now been done. They never occur in conjunctivitis simplex, follicularis, diphtheritica, gonorrhoica, vernalis, etc.

On the other hand, we found these bodies in every recent case of trachoma, in Posen, Berlin, Konigsberg, and in the Rhine Province. They have now been found, further, by

Halberstadter and Prowazek in Java, Mijaschita in Japan, Leber in Austria, v. Krudener in Russia, and Finlay in Cuba.

It is certain that they are a constant characteristic of trachoma.

What is their nature? We were able to prove that the bodies were different from all known cell degenerations; especially they must not be confounded with the eosinophile-granules in the leucocytes. The bodies have, no doubt, some resemblance to those described by Negri and Guaneve.

But we observe them growing in the cells and see them vanish under treatment; therefore, for this and for other reasons it is very probable that they are a living agent.

All this leads me to think that the eagerly sought pathogenic organism of trachoma has now been finally found.

It would be as yet premature to attempt to assign to the trachoma-bodies their place in the zoological system. They are certainly not bacteria. On the contrary, they are more closely allied to the protozoa." W. R. P.

### The Relief of Eye Disease in Egypt, With Some Consideration of the Incidence of Blindness and Trachoma.

MacCallan, A. F. (*Ophthalmoscope,* October, 1909). A clear idea is given of the remarkable prevalence of eye disease in Egypt, particularly trachoma and its sequelae. A practical classification of the different phases of trachoma is appended.

Trachoma is practically universal among the middle and poorer classes. The author's examination of the pupils of one of the Government Primary Schools at Tanta, the chief town of Gharbieh, the largest and most important province of Egypt, showed 96.43% affected with trachoma. Examination of 18,239 patients at three ophthalmic hospitals showed 6,439 cases of trichiasis or entropion, practically in every case the result of trachoma.

The census of 1907 shows more than half a million persons blind in one or both eyes, 4.57% of the total population of 11,189,978 people.

The figures must be taken with the greatest reserve, but it is probable that they are too low rather than high, owing to the natural reticence to declare personal infirmities. The hospital figures are higher and show during the last three years, of 84,133 patients examined 7.3% were found blind in one or both eyes. Monocular blindness was 4.69% and binocular blindness 2.61%.

A quarter of a million persons in Egypt blind in both eyes is striking when compared to the United States, where the blindness in one or both eyes numbers 85.2 per 100,000 of population, as compared with 4,650 per 100,000 in Egypt. The colored population of Idaho, the state most affected with blindness in the United States, has but 590 per 100,000 blind in one or both eyes. Egypt is therefore nine times as much affected with blindness as the colored population of the most affected state and 55 times as much as the average in the United States.

It is the custom to say at the present time that blindness and ophthalmias are much less prevalent than they were fifteen years ago in Egypt, but if the improvement is real, it can only be in the acute forms, for the chronic forms are just as prevalent as they have ever been, as instanced by 96% of trachoma at Tanta School. The extraordinary density of the population in Egypt, 939 per square mile, will always be a barrier to the diminution of contagious ophthalmias.

The author, at the request of the Egyptian Government, organized and administered a traveling ophthalmic hospital. Two hospitals were organized, consisting of ten or twelve large Indian tents with complete ophthalmic equipment. Ten to twelve in-patients are provided for, but the great majority, 200 to 300 daily, are treated as out-patients. Clinical work is carried on, summer and winter, for five or six hours daily, the rest of the day being employed in preparation for the next day's work. Full notes are kept of all cases.

Each camping ground is occupied for a period of about six months and then moved, to give different provinces the benefit of the treatment. The success of the scheme is evidenced by the amount of work done. June 12, 1907, at Damanhour were treated 45 new patients, 412 old patients, and the number of incurable cases was 18. Sixty-five patients were deferred, owing to lack of time to treat them efficiently.

Three permanent hospitals have now been built, besides the two traveling hospitals. All are staffed by Egyptian surgeons trained by the author.

Trachoma is defined as a condition of the mucous membrane of the eyelids in which gross changes occur, resulting in the formation of so-called granulations (with or without a papillary hypertrophy), which in favorable cases disappear and are replaced by connective tissue. The following classification is based on the comparative prominence of the three features—granulations, papillary hypertrophy and connective tissue formation.

Trachoma is the beginning of the disease, in which slight roughnesses appear, especially at the extremities of the tarsus, forming greyish islands, semi-transparent and almost avascular, with small blood vessels converging towards them. These roughnesses resemble grains of sago. A mucous discharge may or may not be present.

This simple form lasts a variable time, sometimes as long as a year, but after the development to a certain degree of the granulations, the conjunctiva becomes more vulnerable, and complications with species of conjunctivitis other than trachoma usually occur.

This form may pass into trachoma II or, in favorable cases, or cases which have been treated, into trachoma III or IV.

Trachoma II is the stage in which granulations are numerous and large, or in which a papillary hypertrophy is present. It may be divided in the above sense into trachoma IIa and trachoma IIb.

Trachoma IIa. Gelatinous granules are present all over the tarsi and in the upper fornix. In some cases the individual granulations can no longer be distinguished, and they fuse into tumor-like masses or merge into a general infiltration, the tissue assuming a peculiar glassy, gelatinous appearance.

Trachoma IIb. There is formation and hypertrophy of pseudopapillae, consisting in red raspberry-like elevations, which mask more or less the typical gelatinous granules. This papillary form, as it is called, is especially marked on the upper tarsus. It may easily be mistaken for spring catarrh and for a condition occurring as the result of any long-continued irritation or of a protracted attack of purulent ophthalmia in non-trachomatous eyes.

Trachoma III. In this stage cicatrization has definitely begun, and is more or less advanced. Islands of inflamed conjunctiva or of trachomatous granules are seen to be surrounded by a network of fine lines of connective tissue. It is in this stage that necrosis often results from the pressure of the shrinking connective tissue (post-trachomatous). The necrotic tissue may become calcareous. The cicatrization which is typical of this stage is generally supposed to be pathognomonic of trachoma; this statement, however, is not strictly true.

Trachoma IV is a condition in which there is a smooth conjunctiva, seamed by white lines of connective tissue. This is the stage of practically complete cicatrization of the conjunctiva or of cured trachoma. W. R. P.

### The Treatment of Some Chronic Inflammations of the Eye.

Wood, C. G. Russ (*British Medical Journal,* July 24, 1909, p. 202). The author mentions the "combined" treatment with pilocarpine injections, mercury and iodide of potassium as advocated by Prof. Burnham of Toronto, the idea being that the pilocarpine "stimulates the ordinary physiological processes to activity in excess of the normal so that the tissues are more easily acted upon by the mercury and iodide." He finds the method of value, but considers the pilocarpine too depressing and so substitutes for it inunctions of guaiacol, which he says will produce diaphoresis in about an hour if a small quantity be smeared on the skin. The ordinary alterative mixture of hydrarg. perchlor. (gr. 1/16) with potass. iodid (gr. 5) is given three times a day. Once daily the patient is covered with blankets with two hot water bottles and one or two ounces of a mixture of olive oil and guaiacol is smeared in the axilla or the epigastrium. There has been no after depression and the results have been good. E. S. T.

### A Danger Arising from the Use of Plated Instruments in Ophthalmic Operations.

Rockliffe, W. C. (*British Medical Journal,* July 3, 1909, p. 15). The author recently lost a case of cataract extraction through panophthalmitis, and during the after-treatment, on irrigating the wound, he discovered a piece of plating which had come from the de Wecker's scissors and which had lodged near the wound. He assumes that this caused irritation enough to produce the panophthalmitis and raises the question as to whether plated instruments should ever be used.

E. S. T.

### Home Conditions and Eyesight.

Pearson, Karl (*British Medical Journal,* July 17, 1909, p. 138). The author quotes from statistical tables and reasons that there is no marked relationship between corneal nebulae and home environment, and that the same is probably true of all eye diseases. While he does not wish to be understood as depreciating the value of good home conditions, he believes that too much stress has been laid on this point, and that the influence of heredity is of far more importance as an active factor in disease. E. S. T.

### Transient Convulsions in Two Children With Unusual Changes in the Fundus Oculi.

Ballantyne, Arthur J. (*Ophthalmoscope,* 1909). Two cases are reported of children with transient convulsions, who showed unusual changes in the fundus oculi. Both cases were under observation at the same time in the wards of Dr. John M. Cowan in the Glasgow Royal Infirmary.

Case I was in a girl of 13½ years, who complained of headache accompanied by swelling of the eyelids and face. Pains in the legs and throat extending to the abdomen, and vomiting. Several convulsions followed of fifteen minutes' duration, at intervals of one-half hour. The micturition was scanty and infrequent, and the urine gave distinct albumen reaction, also reaction for blood. The tonsils were enlarged and acutely inflamed. There was distinct dilatation of the left ventricle. The convulsions ceased after the second day, and steady improvement followed, and patient left the hospital after 13½ weeks.

The ophthalmoscopic examination showed optic disk rather pale and arteries somewhat narrow. Small, irregularly-shaped masses of black pigment were dotted over the retina. At the extreme periphery were a number of pale spots, apparently due to partial chorioidal atrophy. Most of the main branches of the veins were accompanied by white lines, which commenced faintly near the disk, and became more distinct as they were traced far out into the periphery of the fundus.

The veins showed no other changes. The changes were present in both eyes and remaind unaltered as long as the patient was under observation.

There had evidently been a chorio-retinitis of moderate degree, leaving behind it the pigmentary and atrophic changes. The venous condition—periphlebitis—is probably due to degenerative changes, such as hyaline degeneration, taking place in the cellular deposits in the perivascular lymph spaces or in the proliferation of the adventitia.

An extensive periphlebitis without any corresponding arterial changes, and in which the white lines were absent from the immediate neighborhood of the disk, but found on the veins as far out as these could be traced, is extremely uncommon and seems to point to some toxic products of retinal inflammation as the cause of the changes in the efferent vessels.

The etiology is obscure. The renal disease was acute in character and so could not have been the cause of the retinal changes, obviously of some standing. The symptoms and the fundus changes may have been attributable to one and the same cause, and although no history of inherited syphilis, one is inclined to look upon that as the most probable etiologic factor.

W. T. Holmes Spicer is quoted from a paper on "Retinal Vasculitis in Inherited Syphilis," which applies generally to the case under discussion. He says that in these cases the ophthalmoscopic appearances vary according to the severity and the degree of involvement of the retinal vessels. In the slighter forms the veins are bordered by a thin, delicate, grey-white line on each side, which first shows itself near the optic disk, and gradually grows in thickness and density as the vessels pass away from the disk to the periphery. As a rule, the lines are not so well marked in the larger as in the smaller vessels. In such cases the arteries show the change much less than the veins. In others the arteries are affected equally with the veins. In most cases there is widespread disturbance of retinal and superficial chorioidal pigment, sometimes a little like retinitis pigmentosa in the fact of the pigment being retinal.

The second case was that of a bright, healthy-looking child of 12 years, with good family history and no evidence of syphilis. The case closely resembled the first case in the character of the convulsions, albuminuria, cardiac dilatation, etc.

*Ophthalmoscopic Examination.*—The left eye was normal. In the right eye a large number of white spots were seen scattered over the upper part of the fundus. A few small ones were visible near the disk, but they were found in much greater numbers and of much larger size at a distance of five or six disk-breadths above the disk, and extending from that point in an irregular line inwards and upwards, and outwards and downwards. The farthest limit to which they reached in the horizontal meridian could not be traced. The spots varied in size from mere pin points to dots with an apparent diameter, as seen in the erect image, of ⅛ inch. Their shape was irregularly rounded, some of the larger ones having evidently resulted from the confluence of smaller ones. They had a bright, pure white color, almost glistening in appearance. There was no pigment disturbance in the neighborhood. Their situation was in the retina, some of them deeper than the retinal vessels, but some superficial to the latter in the nerve-fiber layer.

Very far out in the upper temporal region of the fundus the retina showed a greyish, opaque appearance, with one or two whitish streaks running through it. The veins at this part were bordered with white lines, and one or two dark-red, oval bodies, which were difficult to make out, but which looked like globular dilatations of the veins. One or two arteries in the same region also showed perivascular lines.

Vision was perfect in both eyes, and the field of vision in the right eye normal or only very slightly contracted. All the other functions of the eyes were normal, and there was no history of night blindness. There was no variation of the conditions observed while the patient remained under observation.

The author has been unable to trace any similar case in literature. Chorioidal changes and colloid outgrowths of Bruch, which at first glance the spots resembled, could be excluded, owing to their superficial situation, their brilliant white color and absence of pigment border. The spots were more like those of albuminuric "macular star" than any others, but in grouping and distribution entirely different, and, moreover, the albuminuria was, after all, of a trifling character and there was no evidence of chronic kidney disease.

The history and details of the case excludes retinitis punctata albescens, retinitis circinata, and all other forms of retinitis. "The changes more closely resembled those in certain unexplained cases described and figured by Batten, Holthouse, Bickerton, and Blair, in none of which, however, was any condition present corresponding with that found in the extreme periphery of the fundus in the case under rview. That condition indicated that at some past time there had been a retinitis with perivasculitis leading to an atrophic and cicatricial condition of the retina and to further vascular changes. In the absence of evidence to the contrary, one must assume that the white spots originated at the same time, that they are of a degenerative character, and are further evidence of a past retinitis. What the etiology of the retinitis was, one cannot say. There was even less reason for a diagnosis of inherited syphilis in this case than in that of the girl first described. As in that case so in this the question arises whether the existence of corresponding changes in the nervous system and elsewhere might account for the symptoms for which he was admitted to the hospital." W. R. P.

### A Case of Spontaneous Pulsating Exophthalmos.

Hird, Beatson, and Haslam, Wm. F., (*Lancet,* February 13, 1909). The authors mention the extreme rarity of cases of spontaneous pulsating exophthalmos; that it almost invariably occurs on the right side, and state that these cases are all probably due to arterial degeneration caused by syphilis or atheroma, leading to ulceration and rupture of the artery.

A cse is reported in detail occurring in a woman 24 years of age, which came on quite suddenly. The right common carotid was tied six weeks after the first symptoms were noticed, with a result nine months later of but little improvement.

The author mentions the methods which are at our disposal for treating pulsating exophthalmos as follows:

(1) Compression of the common carotid artery; (2) ligation of the common carotid or internal carotid; (3) ligation of the internal angular vein; (4) ligation of the carotid on the opposite side; and (5) subcutaneous injections of gelatin. Also the suggestion of Drs. de Schweinitz and Holloway of ligation of the superior ophthalmic vein. N. M. B.

### The Significance of Optic Neuritis.

Russell, J. S. Risien, M. D., F. R. C. P. (*Ophthalmoscope*, September, 1909). The subject of optic neuritis is discussed from the standpoint of the general physician, particularly as to those cases in which difficulty arises in the determination of the cause.

The chief problem with which the physician is concerned when confronted with optic neuritis is whether the neuritis is due to the presence of intracranial tumor or whether it can be otherwise satisfactorily explained. Although it is true that with a gross intracranial lesion, such as tumor, the appearances presented by the optic neuritis are very different from those revealed when a toxic blood state, unattended by increase of intracranial pressure, is responsible, the condition may be almost misleading and intracranial pressure may be suspected when none exists, or an altered blood condition may be mistaken for an increased intracranial pressure.

The cause may be evident, as when other signs exist which show the presence of intracranial tumor, abscess, meningitis or sinus thrombosis. On the other hand, the difficulty may be so great that it is impossible to determine the cause and, while the evidence is sufficient to distinguish organic disease from functional disturbance, there is nothing in the character of the neuritis to establish which of the many organic causes of optic neuritis is in operation.

Anemia is probably a much overrated cause of optic neuritis, only one case having been met with in his experience in which optic neuritis was associated with anemia. In the disease known as subacute combined degeneration of the spinal cord evidence is now in favor of regarding both the destruction of the nerve elements and the grave anemia, to be caused by some toxic agent rather than, as formerly, ascribing the spinal degeneration to anemia. A toxic agent so deleterious in its action on the nerve elements of the spinal cord, might reasonably be expected to produce similar effects on the optic nerves with neuritis as a consequence. Consideration of the kind add weight to the view that when optic neuritis occurs in a case of anemia, it is not due to the effect of an altered blood state on the optic nerves, but rather to intracranial thrombosis of a sinus or vein, a view that finds further support in the fact that paralysis of one of the ocular muscles may accompany the optic neuritis in a way that makes common cause in every degree probably.

Headache is a notable feature in cases of this kind, but a diagnosis of intracranial tumor, in the absence of other data, cannot be made until we have excluded syphilis. Even should the morbid phenomena disappear under anti-syphilitic treatment, this cannot be accepted beyond further question, for other conditions may also yield to similar treatment. Better evidence is to be derived from Wassermann's serum test or the lumbar puncture, for if the former is positive and an excess of lymphocytes is determined in the cerebrospinal fluid, the diagnosis cannot be reasonably doubted.

Disseminate sclerosis has never in the experience of the author been associated with optic neuritis. The condition has either been one of primary optic atrophy of the nerves or the phenomena have been those ascribed to retrobulbar neuritis. Although the clinical manifestations tally with those which obtain in a case of retrobulbar neuritis, the morbid process responsible is the same affecting other parts of the nervous system and in no sense a neuritis.

With all the more usual causes of optic neuritis excluded, and there seems to be no reasonable doubt of intracranial tumor accounting for the neuritis, the diagnosis may be falsified in that improvement results. It then becomes tempting to surmise a simple cyst, a quiescent tuberculous mass or Quincke's serous meningitis as probable causes, but it were better to admit inability to arrive at a positive diagnosis of the real cause of the optic neuritis. Recovery may result in those cases in so far as all other symptoms are concerned, and yet the patient may be left blind owing to optic atrophy consecutive to the neuritis. The author agrees with Sir Victor Horsley that no case of optic neuritis, due to increase of intracranial pressure, should be allowed to go on to atrophy and blindness, when by opening the skull and dura mater sufficiently freely the sight may be saved. Some cases come under observation too late, when optic atrophy is already far advanced, while others of them improve and the neuritis subsides without leading to atrophy and without its becoming necessary to advise operation.

In conclusion, the author adds that he is also entirely in accord with Sir Victor Horsley in considering that optic neuritis may have a localizing, as well as diagnostic value, and that the eye which presents the older and more severe neuritis, usually corresponds to the cerebral hemisphere where the increase of intracranial pressure is most likely to be found.

W. R. P.

### The Ipsolaterality of Optic Neuritis and the Lesions Causing It.

HORSLEY, SIR VICTOR (*British Medical Journal,* September 25, 1909, p. 877). The author confines his remarks to "papilloedema" (as it is styled by de Schweinitz), that is, neuritis that depends solely upon intracranial pressure, and does not include inflammatory manifestations. He believes in pure pressure producing these symptoms, although Sir William Gower does not agree. The special point insisted upon is that the lesion is ipsolateral, that is, on the same side as the brain lesion. At Queen Square Hospital, in London, seventy-one per cent. were ipsolateral out of seven hundred cases. Williamson has found 85 per cent. in a large series of frontal tumors. The earliest signs of edema are seen in the upper part of the disk when pure pressure exists. The field is first contracted below. The macular star seen in these cases is due probably to rumpling of the retina, as is held also by Marcus Gunn. The author has found the white spots in the fibrillary retina, and composed of connective tissue cells which have absorbed fat and large spheroidal cells, which were formerly taken for swollen nerve fibers. It is important to consider the minute appearances of the disk rather than the simple degree of swelling.

E. S. T.

### Kerotomy.

WALKER, A. NIMMO, CANTAB, B. C. (*The Ophthalmoscope,* November, 1909). The operation for kerotomy was devised by George Edward Walker, the father of the author, in 1886, and was described by him as follows: "Standing behind the recumbent patient, insert the speculum and fix with toothed forceps the conjunctiva opposite the lowest point of the cornea. Then thrust a broad needle through the sclera, just behind its junction with the cornea, until the shoulder of the needle is visible in the anterior chamber. Of course the blade must be held nearly parallel with the plane of the iris, but the puncture should be oblique and valvular, so that on the withdrawal no aqueous escapes."

"This puncture should be repeated until the circumference be traversed. In severe cases the bridge between the incisions should be the same width as the incisions themselves; in cases of less gravity, twice or thrice the width. I am in the habit of making about two-thirds of the incisions with the right hand and the remainder with the left.

"If carefully performed, the operation causes no loss of aqueous, or if it does, the fluid is replenished rapidly, so that the anterior chamber is as full after the operation as before. It is important to operate so as to ensure this, in order to prevent the additional pain consequent on an empty chamber, and, what is more important still, to enable one to complete the incisions without endangering the lens."

To this description some minor details may be added:

The author suggests keeping the iris contracted, that the point of the needle be entered well behind the corneoscleral junction and kept well up in the anterior chamber. The number of incisions averages about ten, but varies with the width of the broad needle and with the severity of the inflammation. Make the lower incisions first in order that the field of operation be not obscured by blood.

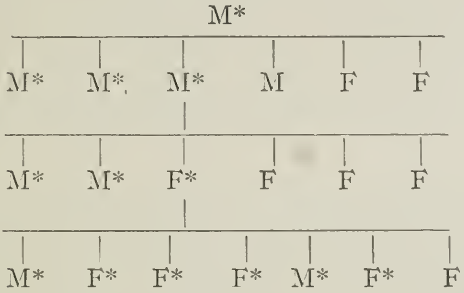
Except in children, local anesthesia only is necessary. Usually the pain is not severe. The author thinks the operation is based on sound pathological principles and says: "Its curative action lies in the free drainage of the cornea and the relief thereby afforded to the condition of stasis in the lymphatic channels, or, to express it in language of present-day theory, in the removal of toxic substances and the substitution of fresh immunizing fluids. This explanation is similar to that given by Axenfeld of the action of paracentesis, but the action of kerotomy is much more powerful, as it directly relieves the cornea itself, while it is free from the dangers of paracentesis, i. e., of causing cataract, anterior synechia, and prolapse.

Kerotomy is indicated in any grave inflammation of the cornea, whether acute or chronic, but especially in eczematous inflammation. It should also replace the Saemisch operation.

W. R. P.

### Hereditary Transmission of Squint.

Landon, Ernest E. B. (*British Medical Journal,* October 23, 1909, p. 1228). A girl of eleven applied for treatment at the dispensary, with a convergent squint of 35°. It was noticed that the mother also had a squint of 25°. In both cases the squint was in the right eye. On taking the family history, it was found that on the mother's side, a squint existed in six out of her seven children (all except the youngest, two months old), the mother herself and her two brothers, her father and two of his brothers, and her grandfather.



E. S. T.

### Adenoids and Asthenopia.

Killen, W. M. (*British Medical Journal,* September 25, 1909, p. 879). The author cites his experience with cases of low degree of hypermetropia, with asthenopia, relieved by removal of the adenoids, and thinks that this must happen more frequently than we realize. E. S. T.

### Observations on Injuries of the Optic Nerve.

Evans, J. Jameson (*British Medical Journal,* September 11, 1909, p. 645). Optic atrophy ranks second to ophthalmia neonatorum as a cause of blindness. At the Birmingham Eye and Ear Hospital 25 per cent. of the optic atrophy is due to traumatism. Direct injuries are most common in war, and are generally associated with hemorrhage into the orbit, protrusion of the eyeball, etc. In most cases the injury is back of the entry of the retinal vessls, so that the intraocular circulation is undisturbed. If the nerve has been divided anterior to the entry of the vessels, the picture resembles embolism of the central artery. Direct injury also occurs rarely in obstetric practice. It is possible that intranasal operations on the sphenoid and ethmoid may cause injury of the optic nerve. Indirect injuries are more common. Blows on the margin of the orbit sometimes cause atrophy, from rupture of the nerve. In such cases, we usually find some hemorrhage in Cloquet's canal, and also in the retina and chorioid. Blows on the orbital margin may cause:

1. Fracture of the skull extending to the optic foramen.
2. Laceration of the nerve by detached or displaced anterior clinoid process, or other spicule of bone.
3. Hemorrhage into the sheath or substance of the nerve.

Gunshot wounds of the orbit sometimes cause blindness, although the missile has not touched the optic nerve. These are probably vibration effects. Falls or blows on the head may cause injury in some one of the ways detailed above.

E. S. T.

### Acute Orbital Periostitis Consequent on Dental Disease.

HARMAN, M. BISHOP (*British Medical Journal*, September 25, 1909, p. 878). The author lays stress upon the importance of looking for sources of sepsis in the mouth and teeth, in all eye cases which may come from digestive disorders, and says that sepsis from this cause is well known in general medical practice. Two cases are reported; the first, a woman of 20, had two teeth removed for caries of the roots, with severe swelling of the whole side of the face. The swelling of the face continued, and finally a mucocele of the left tear sac developed, with profuse discharge of pus. The sac was finally removed, and an extensive curettage of denuded bone was done, after which the patient made a good recovery. The scond case, a woman of 19, had two teeth extracted, following a severe attack of swelling of the face, and, later, a discharge of pus came from the cavities in the gum. The edema of the lids, which had been present before the extraction of the teeth, increased, and finally, on admission to the hospital, the eye was thrust forward, there was great swelling of the orbital tissues and inflammation of the optic nerve. On operation a large collection of pus was found under the periosteum near the malar bone and extending into the orbit. The recovery was good, but the optic nerve became atrophic. A few other such cases have been reported in literature. E. S. T.

### Discussion on Eye Injuries in Relation to Workmen's Compensation.

FERGUS, FREELAND, Opening Paper (*British Medical Journal*, September 25, 1909, page 874). The author speaks of the difficulty of the problem, because some blind people are much more incapacitated than others. It is difficult also to properly classify from this standpoint the degrees of blindness. He considers the papers of Mr. Berry and Mr. Percival to be standards. The question of occupation and necessity for the use of the two eyes together should be carefully considered. Age is also to be considered, as it is only very exceptionally that a man above thirty-five or forty can learn a new trade. He thinks it would be well to have a list of the trades at which monocular men have been known to work. After discussing these phases of the question in detail, he finally advocates the employment of a medical referee. E. S. T.

### On the Treatment of Detachment of the Retina.

DEUTSCHMANN, PROFESSOR R. (*The Ophthalmoscope*, November, 1909). After speaking of his two methods of operating for detachment of the retina, viz.: bisection and injection into the eye of sterile vitreous humor of certain animals, the author gives the results obtained from 345 operations which, in his own words, are as follows:

"I had treated up to the 1st of July 260 patients, with 345 eyes affected with detached retina. Of those 345 eyes I had operated upon 302; the treatment was completed upon 267 eyes. Of those 267 eyes

| | | |
|---|---|---|
| Cured | 70—26.1 | per cent. |
| Improved | 94—35.2 | per cent. |
| Not cured | 103—38.7 | per cent. |

If I subtract those patients on whom the operation was performed as an experiment only, without any chance of recovery (as they were informed before the operation), the number of eyes

| | | |
|---|---|---|
| Cured | 31.1 | per cent. |
| Improved | 41.3 | per cent. |
| Not cured | 27.6 | per cent. |

But in another way also my figures are very instructive, namely, in showing the relation of the different refractions to the detachment of the retina: thus, there existed in the 345 eyes

| | |
|---|---|
| Myopia of 1D.— 6D | in 52—15.5 per cent. |
| Myopia of 7D.—12D | in 50—14.4 per cent. |
| Myopia of 13D. and more | in 57—16.1 per cent. |
| Emmetropia | in 42—12.1 per cent. |
| Hypermetropia | in 8— 2.3 per cent. |

Seven of the emmetropic cases were said to have acquired the disease through a lesion.

Fifteen of the 57 myopic eyes with myopia of 13 and more diopters were operated upon by discission of the crystalline lens; from 9 eyes cataract was extracted without any or any remarkable myopia before. On 51 eyes the refraction could not be fixed; in these cases the other eye had a myopia of

| | |
|---|---|
| 1D.— 6D | 11 |
| 7D.—12D | 20 |
| 13D.—more | 17 |

Supposing that in such cases the myopia of the affected eye was at least the same, I find myopia of

| | |
|---|---|
| 1D.— 6D | 63—18.2 per cent. |
| 7D.—12D | 70—20.2 per cent. |
| 13D. and more | 74—21.1 per cent. |

It is not possible to fix the refraction of 4 eyes which had a detachment of the other one, and of 66 eyes with detachment of both retinae, but of these 23 may certainly have been myopic before. Therefore I count 231 myopic eyes of 345 affected eyes in toto—66.9 per cent. myopia of all eyes with detached retina. Both eyes of the same patient were affected 85 times out of 260,—32.6 per cent., of these 47—55.2 per cent.—were myopic.

There is still one point that I would mention: that is the tension of the affected eyes. Lauber reports 53 cases of detached retina where the tension was diminished in 48 cases, and adds: "This experience proves that in a great majority of the cases the tension of the affected eyes was diminished." I found the tension of the affected eye diminished in 45 only of 345. My experience, therefore, does not confirm that of Lauber."

The author then formulates certain rules as follows:

1. Never operate upon a recent detachment so long as the detached part is situated in the upper part of the fundus oculi. The best way is to wait, without treating the patient, until the subretinal fluid has gravitated downwards.
2. As a rule, make the bisection with a double-edged linear knife downwards in the anterior boundary of the cul-de-sac.
3. Bisect horizontally, guide the knife tangentially to the eyeball, from downwards and outwards to downwards and inwards.
4. Make the bisection as quickly as possible, in a straight direction through the eyeball, avoiding junction at the spot of the counterpuncture, and draw back the knife in the same way as it was introduced.
5. Turn the blade a little on the spot of the puncture, so that the retinal and eventually the preretinal fluid can escape.
6. Do not repeat the operation if the first has had, by any chance, an unfavorable result, say, by wounding one of the larger retinal vessels, or by some other unexpected event equally rare.
7. Speaking generally, the operation can be repeated twenty times or even oftener, if necessary, with sufficiently long intervals between successive operations, according to the reaction shown by the eye.
8. Apply the bandage—or better, a celluloid shield—quite loosely for the first 24 hours on both eyes, then only upon the one which has been operated upon, for 4—5 days.
9. Apply atropin to the operated eye during the whole treatment.
10. Keep the patient in bed for seven or eight days after every operation.

The technic of the operation of the injection of sterile animal vitreous body is as follows: The syringe, filled with prepared animal vitreous, is introduced first in the region of the ora serrata, outwards and downwards. The assistant holds the syringe steady, while the operator makes a simple bisection downwards. After having made it, he takes the syringe, and, pushing the syringe forward—it is only possible to push it forward—he injects a certain quantity, according to the consistency of the eyeball. Then the syringe is withdrawn and the puncture closed for some minutes with a pair of toothed forceps. Both eyes are loosely bandaged for 24 hours; then that which has been operated upon only for six to eight days. Further measures depend upon the reaction. The latter is never dangerous if one uses for the first infection a weak animal vitreous, that is, the ready-prepared one, diluted with the same quantity of physiological salt solution. In any case the human vitreous becomes more or less cloudy and clears up again in the course of weeks or months. If any stronger reaction sets in, it is only necessary to prescribe atropin and warm fomentations. Under all circumstances this operation is to be reserved as a last refuge—do not expect more of it than is possible in hopeless cases. I have treated 68 eyes by this method. With repeated injections:

3 were cured,
26 were improved,
38 were uncured,
1 is still under treatment.

With regard to the way in which my methods act, I believe it may be explained as follows: By the bisection I reduce the retinal tension, which, judging by my experience in cases of detachment of the membrane, can be so strong that it is impossible to reattach it without making one or several incisions. I evacuate the retinal, and eventually the preretinal fluid, and I try to produce small adhesions by hemorrhages between the retina and chorioid. With the injection of animal vitreous body, I try to obtain, not only a mechanical pressure of the detached retina against the chorioid, but also a firm welding of both membranes on an inflammatory basis, with simultaneous better refilling of the eyeball. Relapses certainly may occur under both methods; in such cases I can use both again in order to regain what has been lost." W. R .P.

### A Corneoconjunctival Bridge—A New Method of Cataract Extraction.

CLUCKIE, NEVEN GORDON (*Lancet*, October 9, 1909). It is well known that the present operation for extraction of cataract consists in making a complete section of the cornea through its upper segment. While successful in many cases, it is liable in others to be followed by disastrous results. The modification to which I would direct attention consists in performing von Graefe's operation up to a point that leaves a connecting flap between the cornea and the conjunctiva about four millimeters broad. Instead, then, of completing the corneal section in the usual fashion the Graefe's knife is carried up further under the bulbar conjunctiva for from 10 to 12 millimeters, and it is then withdrawn without cutting through the conjunctiva. We thus have a corneoconjunctival bridge, which may be broad or narrow, but the broader and longer the conjunctival attachment to the cornea, the greater the chances of success and speedy recovery.

The object in having a large corneoconjunctival band is to allow of sufficient bulging or gaping of the wound to take place so that when pressure is applied by a Daviel's spoon on the lower part of the cornea the wound opens sufficiently to allow of the exit of the lens and to close immediately pressure is withdrawn. If the surgeon desires to perform iridectomy at this stage it is best done upwards and inwards; the capsule of the lens may be ruptured either before or after the iridectomy from the temporal side. By these means the operator will feel that he has complete command of the eye, no matter how nervous or restless his patient may be.

I claim that by means of this corneoconjunctival bridge, the continuity between the cornea and the conjunctiva being maintained, the nourishment of the cornea is not interfered with to the same extent as in the usual method, where complete division is carried out. Moreover, the parts are kept in more accurate apposition, thereby favoring rapid and certain union. From this it follows that the anterior chamber will be reestablished in a shorter period. N. M. B.

### The Theory of Vision.

ELDRIDGE-GREEN, F. W. (*Lancet*, October 2, 1909). When a ray of light impinges on the retina it liberates the visual purple from the rods, which then diffuses itself into the fluid surrounding the outer segments of the cones. In the fovea there is no visual purple until this diffusion takes place. This substance is photo-chemical and a photograph is thus formed. The rods are connected only with the formation and distribution of the visual purple and not with the conveyance of light impulses to the brain. The decomposition of visual purple by light chemically stimulates the ends of the cones, and a visual impulse is set up and conveyed through the optic nerve to the brain. Thus a color-blind person has an eye which in no way differs from the eye of a normal-sighted individual, but the reason that the former does not distinguish between rays of light whose difference in wave length is obvious to the latter is because his brain centers are not sufficiently developed to appreciate so small a difference. All, even the best among us, are really very color blind, for we are utterly unable to distinguish any difference in color in large patches of the spectrum; for instance, if a spectrum is looked at and all is cut off except a patch, say, of green, which appears monochromatic, it is impossible for any one to say which end of this patch corresponds to the red end of the spectrum and which to the violet, while we know there is a considerable difference in the wave lengths of the rays comprised in this patch. The color-blind person would in like manner see perhaps the red, orange, yellow and green all as one color. Such cases correspond identically with the musician who is able to distinguish small fractions of a tone, while another, who has "no ear for music," is incapable of telling and remembering one note from another unless the difference between is enormous. In regard to the evolution of the color sense, Dr. Eldridge-Green suggests that to the least developed sense of sight all nature appeared black and white of various shades, as is seen in an ordinary photograph, but as more cells were added to the visual centers, rays of low refrangibility were seen as red, and of high refrangibility as violet, and a tinge of these two colors was visible at each end of the spectrum, with a large neutral band between. These colors gradually approached until they met. The eye then began to be able to distinguish something at the point of juncture where the rays most differed in wave length from the two ends, and these were termed green. Yellow next became interpolated between the red and green, blue between the green and violet, orange between the red and yellow, until some eyes became capable of seeing a distinct color, indigo, between the blue and violet. As development progresses more colors may perhaps become visible, and what we call normal color vision now may not improbably be termed subnormal in years to come. As a retrograde condition we find examples of all the conditions from total color blindness to full normal vision existing at the present time. N. M. B.

### The Operative Treatment of Cataract.

Lister, A. E. J. (*Lancet,* October 16, 1909), reports results of 576 cataract extractions operated at the Civil Hospital, Jullunder, where he worked for a year under Major Smith. Eighty-one cases were operated upon at the Cautonment General Hospital, Meerut.

*General Results.*—Suppuration occurred in two cases, leading to total loss of the eye. Suppuration of site of wound occurred in two cases, due to infection at first dressing done by an assistant. One of these cleared up, with no after-effects at all. The other cleared up slowly, but was lost sight of; the patient going home, and the final result is unknown. This low percentage (0.34%) of eyes lost by suppuration the author thinks due to the use of a 1 to 2000 perchlorid douche, which is admitted is a strong one.

There were two cases in which slight keratitis occurred, which quickly cleared up. No case of intraocular hemorrhage and no case of iritis. Troublesome lacrimation occurred in several cases, but yielded readily to a treatment, as also did several cases of marked conjunctival injection.

Vitreous was lost in 29 instances. In 22 cases it occurred during extraction of the lens in ordinary cataracts. In two cases it occurred during extraction of the lens which had been previously dislocated by the "rawal" or native lens coucher. The only serious complication due to loss of vitreous in the above series was "drawing up of the iris, leading to occlusion of the pupil in one case, which the author purposes to operate upon later on.

"In most of the other cases the escape of vitreous caused no trouble at all, but in a few cases the patient suffered from lacrimation, due chiefly to the edge of the iris being caught in the wound." "In two cases the edge of the iris had to be snipped off."

The loss of vitreous decreased as the experience of the operator and his assistants increased—particular stress being laid upon the latter.

It is quite impossible to give a statement of the exact vision obtained by every patient operated on in the Indian hospitals in the provinces. At Jullundur, owing to deficient accommodation, the patients are allowed ordinarily to leave the hospital on the sixth day. The eye is still weak and cannot tolerate light well enough to allow the vision to be tested at a distance. In Meerut my patients are discharged on the tenth day, but that is also too early to allow their vision to be tested other than roughly. I show the patients groups of small dots, varying in size from one readily seen down to one as big as the ordinary full stop in print. They are asked to count these with a + 10 D. lens. If they can count down to the last size but one, I am sure from experience their vision will be about 6/6 when the cornea has settled down. This may not appear very scientific, but it is all one can do, and it is for all practical purposes sufficient. I have had the opportunity of seeing and testing many cases of my own and of Major Smith which came back for various reasons, and from an experience which is based on certainly not less than 250 of these cases I should say that the average vision obtained after this operation, provided the eye was healthy before operation, is 6/6.

The astigmatism resulting in working out the refraction is from + 0.75 to + 1.0 D.

*Technic.*—My technic was exactly that of Major Smith, to whose kind tuition I owe almost all that I know of this operation; it has been fully described already, so I shall not describe it here, but a few observations on matters which my experience suggests may be of interest. I think that the most important thing in the operation is for the operator to have an exact knowledge of the particular way in which to extract each class of cataract. It is extremely difficult to give a description of the different classes of cataract classified from the point of view of the operatior. It is quite easy to point them out clinically, and I cannot too strongly emphasize the importance of the operator being able to tell at a glance which class of cataract he has to deal with, and how it will behave. For instructions on this point, I advise him to see Major Smith's book, which is coming out shortly, as space forbids me to go into it here.

The second part of the article deals with the after-effect of escape of vitreous, vision of cases, cases in which disease of the fundus was present, etc., with tabulated results. The article should be read to be fully appreciated. N. M. B.

### Irrigation of the Anterior Chamber After Cataract Extraction.

HARMON, N. BISHOP (*Ophth. Rev.*, November, 1909). During the recent meeting of the British Medical Association, he had the opportunity of seeing Dr. Killen put into practice both methods of irrigation advocated by McKeown—

(1) The initial irrigation of the cataractous lens by means of hypodermic needle attached to the tube of an irrigator and inserted through the corneal incision beneath the capsule of the lens. (2) Washing out the fragments of the lens remaining within the anterior chamber after the extraction.

He states: "By the first operation I was not greatly impressed. The lens was a mature senile cataract, and the irrigation beneath the capsule, preceding the use of the cystotome, seemed to me to be an unnecessary complication and of doubtful utility. Maybe the method would be of service in a case of immature cataract.

"Of the second operation, the washing out of the debris of the lens after extraction, my impressions are of the liveliest and most happy order." The statement of Elliot, "It appears to me to be the one important step in advance made recently in the treatment of cataract," seemed fully justified.

The clumsy and complicated apparatus devised by McKeown and also that of Killen is criticized. The writer uses an improvised apparatus of his own. N. M. B.

### Operation on the Globe in Presence of Chronic Dacrocystitis.

TAYLOR, S. JOHNSON (*Ophth. Rev.*, October, 1909), says upon one point there must be absolute unanimity amongst ophthalmic surgeons, viz., that operations upon the eye, and especially those involving the opening or puncturing of the globe, are fraught with the gravest danger where the lacrimal passages are in an unhealthy condition.

In the past, various preliminary measures have been recommended to get the parts into healthier condition, such as slitting up and probing the lacrimal passages, syringing them out with various antiseptics, and the application of iodoform styles, strong solutions of protargol, etc., to the interior of the lacrimal sac. All these were more or less beneficial, but they were not certain, and the modern plan of thoroughly dissecting out the lacrimal sac before operation on the eye is by far the best and safest and the one to be adopted in the vast majority of cases.

But at times—though rarely—it may be undesirable, e. g., in cataract with mucocele in very old, decrepit patients, to submit the subject to more than one operative procedure, if possible, or in cases of acute or subacute glaucoma, with lacrimal sac disease, there may be no time to remove the sac, etc.

In such cases one or the other of the methods of blocking the upper and lower canaliculi can be carried out with ease, facility and safety.

The plan I have successfully adopted in three cases of cataract extraction this year consists in the simple device of ligaturing the upper and lower canaliculi as the first step in the operation.

In one of my cases I failed, for some reason, to occlude the lower canaliculus sufficiently, and pus still regurgitated on pressure, so I at once inserted the point of the galvanocautery into the lower punctum and burnt the parts a little.

This method is in nowise a new one, but, on talking it over with friends, I found it was little known, and I myself have never seen it adopted by anyone else and have never used it until this year. N. M. B.

(Dr. Casey A. Wood advocated several years ago this procedure, and has frequently used it since then.—Ed.)

### Prevention of Blindness.

(*Opthalmologic Review,* September, 1909). Two committees have recently had under consideration the question of the prevention of blindness, and have devoted special attention to ophthalmia neonatorum as one of the chief causes of loss of sight.

One committee consisted of persons connected with the blind institutions, in conjunction with two ophthalmic surgeons, and recommended:

(1) Early notification of births.

(2) That ophthalmia of the newborn should be added to the list of diseases compulsorily notifiable under the power of infectious diseases. Act of 1889.

(3) That more definite teaching should be given midwives on the seriousness of eye diseases in children and that the

Central Midwives' Board issue more stringent instructions on the danger of "whites" in lying-in women.

The second committee was appointed by the British Medical Association, associated with members appointed by the Royal Society of Medicine (Sections of Obstetrics and Gynecology and Diseases of Children), by the Ophthalmological Society and by the incorporated society of the Medical Officers of Health.

The conclusions of this committee as to the prevalence of ophthalmia neonatorum are thus stated:

(1) Ophthalmia neonatorum accounts for upwards of 10 per cent of all cases of blindness.

(2) As far as can be judged from returns, cases of ophthalmia neonatorum show a slight but steady decrease.

(3) Ophthalmia neonatorum is still the cause of at least one-third of the blindness in British Blind Schools.

SECTION II. Contains the recommendations of the Committee as to preventive methods.

### A. ADMINISTRATIVE AND EDUCATIVE MEASURES.

(*a*) *Notification.* It is advisable to urge upon the Local Government Board that notification should be compulsory.

(*b*) *Inspection and Treatment.* It should be the duty of the Local Sanitary Authority, upon receipt of notification, to enquire as to facilities for treatment, and, if these be deficient, to arrange for the efficient treatment of the disease.

The treatment of infantile ophthalmia should not involve separation of mother from child if this can be avoided.

(*c*) *Bacteriological Examinations.* It is suggested that bacterioscopic examination of vaginal or conjunctival discharges should be undertaken, free of charge, by the Local Sanitary Authority, when a request for such is made by a qualified medical practitioner.

(*d*) *Educative Measures.* Notices regarding the danger of ophthalmia neonatorum should be issued by Local Sanitary Authorities. They should also be exhibited in postoffices and other public places. Such notices should be periodically distributed by the Local Supervising Authority to every midwife whose name appears on the roll of midwives for the particular area concerned.

(*e*) *Central Midwives' Board.* The presence of purulent vaginal discharges should be included by the rules of the Midwives' Board among the conditions for which medical help should be summoned.

(*f*) *Maternity Hospitals.* It is recommended that among the members of the medical staff every maternity hospital should include an ophthalmic surgeon. The maintenance of accurate records concerning ophthalmia neonatorum is suggested as a means of keeping the disease constantly under the notice of all concerned.

### B. MÉDICAL MÉASURES.

I. *Treatment of cases presumably normal as regards danger of ophthalmia neonatorum.*

Where a medical man is not in attendance the midwife or nurse should adopt the following routine:

(i.) Directly the head is born, and before the eyes are opened, the lids and the surrounding skin should be wiped clean, a separate piece of sterilized wool being used for each eye.

(ii.) Nothing should be dropped into the baby's eyes.

(iii.) The face and the body should not be washed in the same water; fresh water should be taken for each.

II. *Treatment of cases in which the mother suffers from a purulent vaginal discharge.*

(*a*) *Mother.* If there is a purulent vaginal discharge, whether in pregnancy or labor, medical help must be obtained.

(*b*) *Child.* If a doctor is not already present when the child is born, he should be sent for immediately, in order that any necessary application to the child's eyes may be made.

III. *Procedure when an affection of the child's eyes is observed.*

If there is any inflammation of the baby's eyes, however slight, shown by redness, swelling, or discharge the midwife or nurse must explain that the case is one in which the attendance of a registered medical practitioner is required, and medical help must be obtained in accordance with the rules of the Central Midwives' Board.

### SUGGESTIONS TO MEDICAL PRACTITIONERS.

The following simple measures are advised, which it is believed are in accordance with the most recent knowledge and experience:

A. *In presumably non-infected cases.*

As regards the mother, a policy of non-interference.

In the case of the child, the practitioner should make it his business to see that as soon as possible after the head is born, and before the eyes are opened, the eyelids are cleansed with sterilized wool, and that separate water is used to wash the baby's face and body.

B. *Confinements where infection is known or suspected to exist.*

(*a*) *Mother.* The discharge should be examined bacteriologically and appropriate treatment adopted.

(*b*) *Child.* The baby's eyelids should be carefully wiped free from secretion with sterilized wool, and a single drop of a one per cent solution of silver nitrate should be placed in each of the baby's eyes. N. M. B.

### Malformation of the Cornea in Cases of Inherited Syphilis.

Fuch, E. (*Ophth. Rev.*, September, 1909), says: "It has struck me that in some cases of interstitial keratitis the cornea is obviously a vertical ellipse. The normal cornea, when examined from behind, after dissection of the eyeball, is round. Seen from the front, it appears horizontally oval, because the non-transparent limbus of the conjunctiva encroaches upon the cornea more at the upper and lower margins than at the nasal and temporal sides. So the oval shape of the normal cornea is only apparent and not real. This is not so in the case of a vertically oval cornea, the form of which is a real one and is independent of the limbus.

"It is not more than a year since I first became aware of the frequent coincidence of interstitial keratitis and vertically oval cornea and began to take notes of such cases. Their number, therefore, is still very limited. Nor have I had time to peruse all the existing records of cases of interstitial keratitis in order to see whether in some of these the malformation of the cornea had been noticed. Further investigations are also required as to the cause of the malformation. Moreover, having regard to the incomplete state of my observations, I would not lay them before you, were it not for the wish to have as a subject for my paper a disease for the knowledge of which we are particularly indebted to British ophthalmologists, especially to Mr. Mackenzie and to Mr. Hutchinson.

"Neglecting cases of very slight malformation, I collected during the last year 28 cases, in which either one or both cornea were strikingly oval vertically. Amongst these 28 cases on record there are 20 female patients, which is in accordance with the fact that interstitial keratitis is much more frequent amongst females.

"Half of the 28 cases, namely 14, had interstitial keratitis; there were, besides, 5 cases of chronic iritis, 1 case of unilateral congenital cataract, and 2 cases of corneal opacities, probably due to strumous keratitis. The remaining 6 cases were in old people with senile cataract. As in advanced age the proof of inherited syphilis becomes more and more difficult, I shall, with regard to this disease, take into consideration only the first 22 cases. In 8 of these there was good evidence of inherited syphilis, in 8 others some indication of it; 6 cases exhibited no symptoms of syphilis.

"As regards these cases of interstitial keratitis, only half of them were fresh cases. In the other half the opacities caused by interstitial keratitis were already of long standing, and in some instances were detected only when examined on account of the abnormal shape of the cornea.

"As the number of cases of fresh interstitial keratitis presenting themselves in my clinic during the last year was about 50, it is evident that the malformation of the cornea is by no means a common occurrence in interstitial keratitis. On the other hand, there were 14 cases with oval cornea and no signs of present or past interstitial keratitis. If we leave out of consideration the six cases in aged people, half of the remaining cases presented evidence or at least suspicion of inherited syphilis. I conclude from this that an oval cornea is many times more frequent in cases of inherited syphilis, and especially in those in whom interstitial keratitis will likely occur, than it is in the bulk of the other patients. I am far from believing that an oval cornea should never be present in an individual exempt from inherited syphilis. The malformation of the cornea behaves in this respect like most of the other symptoms of inherited syphilis, none of them, considered alone, being an absolute proof of this disease. N. M. B.

### A New Retractor for Use in Excision of the Lacrimal Sac.

HARMAN, N. BISHOP (*Ophth. Rev.*, November, 1909), refers to different retractors, and describes his own as follows: The frame is that of Muller, and it is no larger than his neat model. But, by an alteration of the prongs at the extremity of the laterally acting blades, and the addition of a claw (something like an old-fashioned "backscratcher"), which can be drawn back by the milled nut at the end of the frame, this retractor will exert the powerful tractor action of Axenfeld's instrument, and yet leave the upper end of the site of the operation free. N. M. B.

### The Therapeutics of Conjunctival Inflammations.

TREBILCOCK, F. C. (*The Canada Lancet*, Vol. 42, p. 332). In this paper, delivered as a clinical address, Trebilcock justly scores general practitioners for their carelessness in the treatment of inflammations of the conjunctiva; discusses what would be the ideal diagnosis and treatment of these cases; and reviews in a comprehensive manner the measures which are commonly employed for their relief. W. G. M. B.

### Practical Eye Treatment for the General Practitioner.

PRICE, NORMAN W. (*The Canada Lancet*, Vol. 42, p. 684), feels that there is something defective in the training of the average practitioner, who very generally is unable to intelligently treat the ophthalmological cases that come before his notice. In the towns and country away from the cities the majority of people are either unable or unwilling to call upon the specialist when in eye trouble. These largely go to the optician, who surreptitiously practices ophthalmology a great deal. The trouble is due largely to the poor training of the general physician; but Price contends that the general practitioner would lose less in fees and prestige, and the specialist would receive, as he deserves, a greater overflow if the general physician patronized the oculist rather than the optician with whom he too often associates himself. Also the general practitioner would, by knowing his ophthalmology better, have a better grasp of his nervous, renal, and vascular diseases, and the laity would correspondingly benefit. He would, finally, with a knowledge of refraction, be able to gain a foothold in a community much earlier when beginning practice.

W. G. M. B.

### The Conjunctivites.

Vaillancourt, Joseph (*Le Bulletin Medical de Quebec,* September, 1909; January, 1909). This paper, addressed to general practitioners, discusses the measures which are commonly used in the treatment of cases of inflammation of the conjunctiva. Vaillancourt makes the statement that the Koch-Weeks bacillus is responsible for seventy per cent. of the acute inflammations of this structure; but this statement does not hold true for the Province of Quebec, where bacteriological examination shows much more frequently the pneumococcus as the etiological factor in these cases. W. G. M. B.

### The Systemic Factor in Disease of the Eyeball.

Triblecock, F. C., Toronto (*The Canada Lancet,* Vol. 42, p. 676), pleads, in a well-written article, for the wider view in the therapy of acute and chronic diseases of the eyeball. That physician will be happiest in his treatment who early finds the systemic dyscrasia of which the ocular condition is but an expression. The author discusses at length the relationship of the inflammations of the eye, particularly those of the uveal tract, to syphilis, tuberculosis, gonorrhea, rheumatism, gout, pyogenic foci and in other parts of the body, faulty metabolism, and the like. In treatment it should be our duty: first, as rapidly as possible to eliminate the toxic substances by the natural channels and replace the flux by innocuous fluids; secondly, to eradicate from the dietary improper articles of food, and temper the fuel to our patient's capacity for perfect combustion; and, thirdly, to insist upon such medication as will tend to promote a more complete metabolism, and to administer those agents which we know render the pathologic enproducts more scluble and hence more easily eliminated. W. G. M. B.

# ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE.

BY

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### Concerning the Question of Kerato Plastic.

(On the Implantation of Preserved Horse's Cornea in the Rabbit's Cornea.)

Salzer, Munich (*Muench. med. Woch.*, July 13, 1909). The author reports the results of implanting egg membrane and horse's cornea into pockets of a rabbit's cornea.

In the former case the membrane for a long time was surrounded only by a light opacity and traversed by a few vessels. In some instances, even after 1 1/4 years, complete absorption had not taken place, slow organization occurred, resembling the healing-in of organic foreign bodies in the peritoneal cavity.

The results obtained from the implantation of pieces of horse's cornea fixed in formol and with fresh horse's Descemets' membrane and the same, after being kept in absolute alcohol twenty-four hours, were as follows:

In almost all cases the clinical course was the same—the reaction was slight, and at the end of four months the grafts were still transparent—vascularization occurred only in a few infected cases.

Microscopical examination showed that Descemets' membrane, either in the fresh state or after preservation in alcohol, heals in without much reaction—the margins were found not sharply differentiated from the surrounding stroma, there was some cellular proliferation, and at times corneal tissue had penetrated between Descemets' fibres. When corneal grafts had been introduced, examination at the end of three months showed the margins closely interwoven with the adjacent tissue—there were no vessels and no nuclei except emigrated nuclei, especially numerous at the margins—the fibrillae of the horse's cornea were for the most part preserved, being substituted at the margins by fibrillae of the rabbit's cornea.

The cases where living rabbit's cornea had been employed (reported by the writer in 1908 before the Heidelberg Convention) were complicated by extensive epithelial cyst formations—the preserved portion of the graft, however, closely resembled the healed-in formol grafts.

He, therefore, concludes that the transparency of the graft is not due to the fact that the graft continues to live; the healing-in process not causing any clouding as long as no infection intervenes—the graft is merely acted upon as any indifferent organic substance—the success of the operation depends upon the condition of the cornea to be operated upon; that a corneal graft will retain its transparency in cicatricial staphyloma is, of course, out of the question.

He suggests that the implantation of preserved corneal tissue might be tried for therapeutic purposes. A. C. S.

### Has the Cause of Trachoma Been Discovered?

SCHMIDT-RIMPLER, Halle (*Muench. med. Woch.*, August 3, 1909). While much has been accomplished lately in regard to the etiology of trachoma, particularly by Greeff, Halberstaedter and Prowazek, the part these trachoma bodies or chlamydozoea play in the etiology of the disease must be decided by the results obtained from the inoculations made with pure culture material.

Until these bodies are isolated and cultures made (if such is, indeed, possible) and inoculations are followed by true trachoma, there will always remain a doubt whether to attribute a successful operation to the conjunctival secretion or to these trachoma bodies.

In the controversy which has arisen between Greeff, on the one hand, and Halberstaedter and Prowazek, on the other, the author defends Greeff's position. A. C. S.

### Concerning the Trachoma Bodies.

Gutfreund, F., Brunn (*Wiener klinische Woch.*, June 24, 1909). Gutfreund examined 106 trachoma cases for the trachoma bodies. In 47 the results were positive: in 22 papillary trachomas the trachoma bodies were found in 17 cases; in 84 granular trachomas in 30 cases; thirty of the positive cases were found in the cases of acute trachoma.

He found the most characteristic appearances to be the half-moon or sickle-shaped intracellular groups—quite characteristic were also large, distended, epithelial cells closely packed with these bodies. These were always found in epithelial cells, never in the leucocytes.

He holds faulty technic or inexperience in knowing what to look for responsible for the many negative results obtained in the beginning. Whether these bodies are parasites or represent a specific cell degeneration are questions still undecided. Their occurrence in acute trachoma is certain, although further investigations are necessary to determine whether the Prowazek bodies are specific for trachoma. A. C. S.

### On the Treatment of Optic Neuritis in Tower Skull.

Anton, Halle, (*Muench. med. Woch.*, August 24, 1909). Anton reports a case of tower skull in a 30-year-old man. Poor vision, dating back to early youth. His subjective symptoms consisted of headache, stupor, vertigo, defective hearing, and sight: vision was getting progressively worse.

The ocular examination disclosed a vision in the right eye of 5/15; in the left eye fingers were counted at one meter. There was constant divergent strabismus. The right eye was pale gray, the margins blurred and the retinal margins small. The left disk was more prominent and the vessels surrounded by whitish striations. Diagnosis: Optic atrophy secondary to choked disk. An opening was trephined in the skull behind the coronal suture. The dura being incised, the superficial veins were found markedly engorged. The ventricle was tapped by a hollow sound passed through the corpus callosum, and the opening widened by moving the sound to and fro. The external wound was drained. Rapid wound healing followed. The operation brought about the entire disappearance of headache and vertigo and the vision in the right eye improved to 2/3.

He reviews the literature and also quotes Gudden, who produced synostosis of the sutures by ligating the internal and external jugular veins. He is inclined to regard these cranial malformations the result of congenital or early acquired obstruction of the venous circulation. On the above cited case the abnormal venous engorgement could be substantiated in vivo. A. C. S.

### The So-Called Trachoma Bodies from the Standpoint of Investigation to Date Concerning the Etiology of Trachoma.

Reis, W., Lemberg (*Wiener klin. Woch.,* June 24, 1909). Reis made systematic investigations in 100 cases of conjunctivitis—acute trachoma (3), follicular trachoma of several weeks' duration without much secretion (6), chronic trachoma including those with acute exacerbations (70), granuloma of the conjunctiva with papillary hypertrophy (trachoma?) (1), control cases in other forms of conjunctivitis 20. The material for examination was obtained from the upper lid, spread on a cover slip, fixed in equal parts of alcohol and ether and stained 4-6 hours in a freshly prepared Giemsa solution.

The presence of the trachoma bodies described by V. Prowazek and Greeff was demonstrated in but two of the patients —in a case of acute trachoma and in the case of papillary hypertrophy with granuloma on the conjunctiva of one lower lid. In both cases only few trachoma bodies were found in the scrapings from the upper lid, whereas in the epithelium obtained from the surface of the granuloma, trachoma bodies in acute exacerbations of the disease throws doubt on their etiological significance—whether they are the active disease producers or reactive products: of what practical importance they are from a diagnostic or prophylactic standpoint are therefore still questions open for further investigation.

A. C. S.

### On the Treatment of Ophthalmia Neonatorum.

SPIRO, Rostock (*Muench. med. Woch.*, August 24, 1909). While the author himself has not given the blenolenicet ointment a fair trial, he believes the treatment with 10% protargol, as carried out in the Rostock clinic, equally efficacious. The protargol is instilled once or twice daily, removal of the secretion and thorough distribution of the solution being effected by repeatedly opening and closing the eye. The home treatment comprises ice compresses and removal of the secretion externally, which follows separation of the lids. This is done every two hours. Conjunctival irrigations are not resorted to. Silver nitrate is used in the later stages. The active treatment is thus done by the physician himself. From 1901-1908, 44 cases (88 eyes) of ophthalmia neonatorum with intact corneas were admitted to the clinic and treated by the protargol-silver method, only one case of corneal complication occurring. He considers the introduction of bleno-lenicet ointment every two hours by means of a glass rod not free from danger, especially if left to the laity. A. C. S.

### Concerning Expectation (Erwartungs) Neuroses in Ophthalmology (Psychical Asthenopia).

SALZER, Munich (*Muench. med. Woch.*, August 17, 1909). Salzer cites the histories of several cases of psychical asthenopia successfully treated by psychical means (suggestion or hypnosis). While in true asthenopia, correction of refractive errors, muscle imbalance or the treatment of a conjunctivitis, will cause the symptoms to disappear, in psychical asthenopia, a condition depending principally upon a diseased concentration of the attention, treatment of peripheral disturbing factors is of no avail. This form of asthenopia is prone to complicate presbyopia, high myopia, mouches volantes, insufficiency of convergence, astigmatism, blepharitis and conjunctivitis.

The cases with trivial bodily ailments to which nervous individuals are apt to become oversensitive, and which often lead to hypochondria, should be separated from the true cases of expectation neuroses in which the function is inhibited by attention overstrain. Just these cases, however, often give the impression of being the result of somatic derangements. Therapeutic success depends upon recognition of their psychical origin. A. C. S.

### Optic Neuritis Following Obstinate Metrorrhagia Cured by Vaginal Hysterectomy.

Marek, Olmutz (*Wiener klin. Woch.*, June 10, 1909). Marek reports the clinical history of a 46-year-old woman who, during a period of 18 months, had been suffering with intractable uterine hemorrhages. Impairment of vision began to be noticed about one year after the onset of illness. Ophthalmoscopical examination showed a bilateral low-grade optic neuritis—O. S., 5/20; O. D., 5/15. After removal of the uterus central vision rapidly improved and the fundus changes receded. A concentric contraction of the visual field, however, remained.

Marek was able to find only four cases of optic neuritis due to hemorrhage of the genital tract in the literature, two by Methoff and one each by Neuburger and Runge. A. C. S.

### On the Treatment of Phlyctenular Ocular Affections from an Etiological Standpoint.

Schutz & Videky, Budapest (*Wiener klin. Woch.*, June 24, 1909). The authors report the clinical histories of 14 cases of phlyctenular disease. They recognize two groups of cases —those exudative in character, responding to dietary regulations (abundance of vegetables with little sugar or fat); secondly, those of tubercular origin—reaching to the tubercular test and responding favorably to tuberculin therapy. In the latter series tuberculosis in other organs is often found associated. The cases of keratitis vasculosa belong to this group.

Further observations are necessary to prove the conclusiveness of these statements and to explain the many transitional types which occur. A. C. S.

### On the Etiolgy of Ophthalmic Migraine.

Schneider, Leipzig (*Muench. med. Woch.*, July 6, 1909). The author reports a case of ophthalmic migraine associated with scotoma scintillans, disturbances of the respiratory mucous membrane and intestinal symptoms in which the attacks followed exposure to cold or wet or coming in contact with persons suffering with a cold, when the attacks occurred about 24 hours later.

In several similar cases of ophthalmic migraine he was able to elicit a history of exposure to similar conditions.

In one case the hardening of the patient to cold and the avoidance of draughts was followed by distinct benefit.

A. C. S.

### The Peripheral Brownish-Green Discoloration of the Cornea as a Symptom of a Peculiar Constitutional Affection.

Fleischer, Tuebingen (*Muench. med. Woch.*, June 1, 1909). In 1902 Kayser published a case of brownish-green discoloration of the cornea in a 23-year-old man, with multiple sclerosis. The discoloration was in the shape of a band about 1 mm. wide, limited to the corneal periphery. The corneal microscope showed it to be made up of minute yellowish-brown pigment particles situated in the deeper layers of the cornea.

In 1903 Fleischer published two similar cases, in one a diagnosis of multiple sclerosis, in the other a diagnosis of pseudosclerosis was made.

In 1908 Salus reported a case complicated with multiple sclerosis.

To learn what relation existed between the nervous affection and the corneal discoloration, Fleischer reviewed the clinical histories of these four cases. He found an intention tremor in every case, and in Kayser's and one of his own cases there were also psychical disturbances. In Kayser's and Salus' cases, in addition to the corneal pigmentation, there was also a brownish discoloration of the bulbar conjunctiva, and in Kayser's case, besides, a cutaneous discoloration, especially noticeable in the skin of the head.

In Kayser's case physical examination revealed an enlarged liver and spleen with intermittent glycosuria. In his own case referred to above there was also occasional glycosuria. The autopsy findings in this case were atrophic cirrhosis of the liver, enlargement of the spleen and chronic nephritis. Microscopical examination of the brain shows no sclerotic foci. Death was due to a profuse gastric hemorrhage.

In the other two cases no complete physical examination was made.

The affection occurred in men between the twentieth and the thirtieth years. In three cases a history of articular rheumatism was obtainable.

Although no pronounced hemachromatosis of the internal organs was found in the above cited case, the pigmentary changes associated in two of the cases with liver cirrhosis, splenetic tumor and glycosuria. Fleischer believes suggestion of a diabetes bronze and the pigmentation of the cornea therefore probably due to the deposition of hemosiderin. As yet no corneal discoloration has been described as a symptom of this disease. Anschutz published a case where there was a brownish stain of the conjunctiva. Fleischer questions the diagnosis of multiple sclerosis, since only one cardinal symptom (intention tremor) of the affection could be elicited, and is more inclined to consider the nervous disturbances as a form of pseudosclerosis.

[While the article was going through the press, Kayser's patient died, a preliminary postmortem examination disclosing hepatic alterations and pathological deposition of hemosiderin in the body—no evidence of multiple sclerosis, nothing strongly suggestive of diabetes bronze.] A. C. S.

### Investigations Concerning Prowazek's Trachoma Bodies and Their Diagnostic Value.

GRUTER, Greifswald (*Muench. med. Woch.*, September 21, 1909). Gruter investigated 50 cases of trachoma, a large number of cases of follicular catarrh, several cases of spring catarrh and other forms of conjunctivitis and a few normal conjunctivae. He used the new Giemsa staining method, with which the nucleus appears red or a pale violet and the protoplasm a light blue. The trachoma bodies take on a deep blue color.

These bodies were found in 21 cases of untreated acute trachoma, the number in a given specimen being very variable. They were most frequently discovered when there was much discharge and when the disease was at its height. They appeared as spherical or hood-shaped bodies, either singly or in pairs, and in close proximity to the nucleus. Rarely was the protoplasm completely filled with trachoma bodies.

In nine of the untreated clinically positive cases of acute trachoma the results were negative. He does not attribute this entirely to the fact that the symptoms in these cases were very mild, because in one almost quiescent case of many years' duration he found Prowazek bodies in great numbers.

Examination of cases in the cicatricial stage, other forms of conjunctivitis (including three cases of spring catarrh), and of normal conjunctivae, gave negative results.

He concludes that absolutely positive information from examination of the epithelium is obtained naturally only in those cases where Prowazek bodies can be demonstrated. Negative findings can not as yet be considered of diagnostic value.

To support this statement he refers to the history of an acute case with positive clinical characteristics, when the microscopical findings were negative, while in the conjunctivae of a fellow workman, the probable source of infection, trachoma bodies were found. A. C. S.

### Bacillus Subtilis in an Orbital Abscess.

CRAMER, MAX, Strassburg (*Klin. Monatsbl. f. Augenheilk.*, July, 1909). Cramer obtained a pure culture of the hay bacillus from an abscess of the orbit, following a foreign body injury, and believes it should be considered as the cause of the abscess, although the cultures were not able to reproduce the infection in animal experimentation. The organism which was formerly considered as a harmless parasite, has been shown to be the cause also of panophthalmitis, ulcus serpens and conjunctivitis. E. A. S.

### A Contribution to Our Knowledge of Mild Hematogenous Inflammations of the Human Eye by Infection with Streptococci.

SCHUESSELE, W., Baden-Baden (*Klin. Monatsbl. f. Augenheilk.*, July, 1909). Schuessele publishes the history of a case of chronic streptococcus septicemia, which finally ended fatally, in which there were repeated attacks of inflammation of the iris and the rest of the renal tract, which were mild in character, and disturbed the ocular functions only temporarily. Retinitis was also present in the form of numerous flame-shaped hemorrhages, and small, round, white spots between the disk and macula. Streptococci were found in the blood, the chief point of local invasion being on the endocardium of the cardiac valves, and death resulted from nephritis after a long period of cardiac and joint disease. The patient was seen in consultation with Prof. Axenfeld, and the author believes the attacks of uveitis and retinitis to have been due to metastases of the organisms, which did not go on to the production of pus. He considers that such cases are of great importance for the etiology of non-purulent inflammations of the uveal tract, especially of the iris and ciliary body, which are often designated as "rheumatic." Probably the greater part of these cases depends upon a local bacterial invasion, aside, perhaps, from the pure gouty forms in which a chemical origin can not be at present disproved.

The case was interesting also in showing the predilection of the eyes to be affected in a general infection of this character. It is quite possible that mild infections of the blood originate in the tonsils and other situations in man much more frequently than is generally assumed, which do not produce the picture of septicopyemia, but may become localized in the eye and cause attacks of "rheumatic" iritis, in apparently healthy individuals. E. A. S.

### **Concerning the Eyes of Deaf and Dumb School Children.**

Snegireff, K. W., Moscow (*Klin. Monatsbl. f. Augenheilk.*, July, 1909). Snegireff gives the results of his examinations of 100 deaf and dumb children, in the Arnold-Tretjakoff School in Moscow. The ages of the children (65 boys and 35 girls) varied between 9 and 16 years. Of the cases in which a history could be determined 51% were congenital deaf-mutes; where the condition had originated subsequently a large proportion was ascribed to meningitis. The chief refractive condition was hypermetropia; myopia was rarely found (9%). These correspond with the figures published by Adler, and show a smaller percentage of myopes than in healthy school children. The range of accommodation was usually normal, in some cases above normal; in seven children spasm of accommodation was observed. Normal or more than normal vision was present in 78%; good vision (not less than 0.5%) was possessed by 90%. Poor vision was due to retinitis pigmentosa, optic nerve atrophy, macular corneae, and congenital amblyopia. The vision of such children is therefore not worse than that of other school children. The variations from normal were due to the conditions shown in the following table:

| | |
|---|---|
| Retinitis pigmentosa | 2 cases |
| Atrophy of optic nerves | 2 cases |
| Chorioiditis | 2 cases |
| Diseases of the eyelids and conjunctivae | 18 cases |
| Diseases of the cornea | 9 cases |
| Cataract | 1 case |
| Congenital amblyopia | 3 cases |
| Posterior staphyloma | 1 case |
| Divergent strabismus | 1 case |

The cases of disease of the eyelids and conjunctiva were of scrofulous origin. Those of the cornea were chiefly old maculae. One case of optic atrophy followed an attack of typhoid at the age of two years, after which the child was deaf and dumb. The etiology in the other case could not be determined. In one case of chorioiditis the father was a heavy drinker; in another there was a peripheral chorioiditis in a myopic eye.

The number of cases in which retinitis pigmentosa occurred was two. Comparison of the statistics of Liebreich, Hocquard, Adler, Badal, Lee, Schaefer, H. Cohn, Mulder and the author shows that it is present in 3% of all deafmutes, and that in general the optic nerve, retina and chorioid are the structures most often affected. These statistics correspond with the facts elicited in the histories, that the prevailing causes of the deafmutism are meningitis and general infectious diseases, such as typhoid, etc. E. A. S.

### Concerning Scopolamine-Morphine Narcosis in 100 Ocular Operations.

STUELP, O. (*Klin. Monatsbl. f. Augenheilk.*, July, 1909). Stuelp reports the results of the use of scopolamine-morphine narcosis in 100 operations on the eye. The method employed was the subcutaneous injection of a total of 1-50 gr. of scopolamine (0.0012) and ½ gr. of morphia (0.03) in three doses. The first injection is given 3 hours before operation, the second 1½ hours later, and the third a half hour before the operation. In the cases in which successful narcosis is obtained, the patients fall into a deep sleep, the face is reddened, the pulse slightly quickened, the respiration slow and deep; the moderately dilated pupils react sluggishly to light; the sensibility of the skin and mucous membrane is greatly diminished, often entirely gone: consciousness is much disturbed, but not abolished, so that usually correct answers are given to energetic questioning.

After instillation of cocain, or infiltration anesthesia, which is never omitted, the eyelids are relaxed, no movements of the eyes or expression of pain occur during corneal incision, iridectomy, or incisions in operations upon the skin, mucous membrane, or muscles, or in curetting, cauterizing or insertion of sutures. On the other hand, the movements of the eyeballs, at the request of the surgeon, are usually carried out correctly and in a quiet and certain manner.

After the operation, the patient usually sleeps quietly without retching and vomiting, with short interruptions to quench the thirst, which is one of the objectionable symptoms. After three to eight hours, during which the pain from the wound has disappeared and the wound has closed, the patient awakes, free from discomfort, and evidencing good appetite. These ideal results are not always obtained, however, and poor results could not be anticipated beforehand. In 100 cases good narcosis was secured in 45%; in a further 26% it was incomplete, but sufficient to carry out the operation; while in the remaining 29% it failed, and in some cases produced disturbing phenomena—slight mental excitement, and striking increase of sensibility, so that chloroform was required to finish the operation.

Stuelp believes, despite the occasional failures, that the method is to be recommended. In glaucoma iridectomies, complicated cataracts and other operations on the eyeball, it makes the operation easier by quieting the patient. No bad effects on the general condition have been observed by him, even in general diseases in which inhalation narcosis is undesirable; and where chloroform is subsequently found necessary, it exercises a favorable action upon it. E. A. S.

### A Case of Xanthopsia in Nephritis of Pregnancy.

YAMAGUCHI, H., Tokio (*Klin. Monatsbl. f. Augenheilk.*, August, 1909). Yamaguchi reports a case of xanthopsia, or yellow vision, in nephritis occurring during pregnancy. Vision was reduced to counting fingers, and the visual field showed a relative central scotoma above, from the fixation point to the 20° circle. The patient complained that everything was gray at the fixation point, and yellow beyond. The nerve was pale, macula unchanged, retina somewhat edematous, but there were no hemorrhages or white spots in the retina. After termination of the pregnancy by abortion, the yellow vision gradually disappeared, vision returned to normal, and in two weeks she had recovered. The urine was loaded with albumin, and the diagnosis was nephritis of pregnancy with xanthopsia. Twenty-two cases of xanthopsia have been reported hitherto, according to Hilbert, but none in nephritis of pregnancy. Simon saw violet vision (akyanopsia) in three cases of albuminuric retinitis, but no yellow vision. As to the etiology, it is difficult to say whether the xanthopsia is of central origin (color hallucination, as Hilbert asserts), or whether the toxines produced in albuminuria attack the tissues of the visual apparatus directly and cause the subjective disturbance of vision. E. A. S.

### "Ophthalmo-fundoscope." A New Instrument for Examination of the Eyeground, in Magnifications Hitherto Never Secured.

Baum, Fritz, Rome (*Klin. Monatsbl. f. Augenheilk.*, August, 1909). Baum has invented an instrument for examination of the fundus by which an upright image is obtained, free from corneal reflexes, which is magnified 10 to 15 times. The construction of the ten cm. long, telescope-like apparatus, which is self-illuminated, must be obtained from the original article. The instrument is highly recommended by Kuemmel, assistant in Prof. Oeller's clinic in Erlangen. It can only be employed if the patient and examiner are able to hold very still. A field of about two disk diameters is shown. Very fine details can be studied, such as minute retinal hemorrhages, and minute changes in the macular region can be more certainly determined than with the ordinary ophthalmoscope.

E. A. S.

### Concerning the Instillation of Tuberculin into the Conjunctival Cul de sac.

Stargardt, K., Strassburg (*Zeitschrift f. Augenheilk.*, Band XXI, Heft 2, July, 1909). So many preparations of tuberculin have been used to obtain this reaction that definite conclusions regarding its use are impossible. In many cases, cited by the author from the literature of the day, serious results have followed its use. The phlyctenules formed in the conjunctiva of several of the author's cases were excised and examined microscopically. The cells were mostly of an epithelioid type, with large pale nuclei containing several nucleoli. Lymphocytes were most numerous in the center and in the periphery, with an intervening zone in which they were absent. Many of the epithelioid cells resembled those found by Leber in trachoma. In the first case examined there were no giant cells found, whereas, in the second case, giant cells were numerous. The surrounding conjunctival tissue in the first case was normal, while in the second case there was everywhere evidence of severe inflammation. In neither case were tubercle bacilli or other bacteria demonstrable.

The author believes that for the ophthalmologist the conjunctival reaction is greatly inferior to the injection method. In the use of the latter, if there is a general reaction and also a positive local reaction, a definite diagnosis is reached. The ophthalmologist will not be likely to use a substance which may increase the inflammation of the affected eye, or even cause intense inflammation, affecting the sight of the remaining eye.

When these conjunctival reactions are used by non-ophthalmologists great care should be used in the selection of cases, and every case should be warned of the possibility of serious ocular reaction, or even loss of vision.

A strong contraindication is to be found in youth and in old age on account of the severity of the local reaction.

F. K.

### Glaucomatous Increase of Intraocular Pressure Occurring in Keratitis Disciformis and Herpetic Corneal Inflammations.

Erdmann, P. (*Zeitschrift f. Augenheilk.*, Band XXII., Heft 1, July, 1909). The author reports three cases of keratitis disciformis, in which there was great increase in intraocular pressure, requiring iridectomy and posterior sclerotomy in one case, and paracentesis of the anterior chamber in another case, with the continuous use of an eserin solution. The author thinks that temporary increase of intraocular pressure is perhaps more frequent in keratitis disciformis, but is often overlooked. He looks upon keratitis disciformis as of nervous rather than bacteriologic origin. F. K.

### The Damage to the Eye Caused by Short Wave Light.

Birch-Hirschfeld, A., Leipsic (*Zeitsch. f. Augenheilk.*, Band XXI, Heft 5, May, 1909). The question as to whether the eye is damaged by certain rays of light and the methods of preventing this damage have been frequently argued in literature with apparently positive results. But a closer analysis shows many contradictions, especially in regard to the rays of light that are pathologic to the lens. After a careful study of the literature and experiments on rabbits' eyes, the author believes that:

1. Undoubtedly the etiologic factor in ophthalmia electrica is the ultra-violet ray. Especially potent are the rays of the shortest wave light (under 300 microns wave length), and, secondly, the rays between 300 and 400 microns in length.

2. The blinding caused by lightning, short circuits, or by the arc light or mercury vapor light is due to the violet and blue rays, in addition to the ultra-violet rays of between 300 and 400 microns wave length. The pathological lesion is in the retina (central and paracentral scotoma, and disturbance of color sense). In erythropsia, a similar cause is potent.

3. That the ultra-violet rays of great intensity are the cause of changes in the capsule of the lens which result in cataract, the author believes is not proven. They may have some influence in the production of glass-blowers' cataract. The cataracts after lightning or short-circuit exposure are caused by the damage to the lens by the electrical current. That senile cataract may be due to the action on the lens of the ultra-violet rays is very likely.

For protection of the eye against intensive ultra-violet rays, euphos glass, enixanthos or Hallauer glass spectacles can be worn. Against light containing less of the ultra-blue rays—as ordinary sunlight or daylight—smoked glass or blue glass is a very efficient protection. F. K.

### The Tuberculin Treatment of the Eye.

Junius, Cologne (*Zeitschrift f. Augenheilk.*, Band XXI, Heft 5, May, 1909), believes that bacillus emulsion is an important reserve force in tubercular therapeutics. In many cases it will show surprisingly good results, though occasionally severe local reactions will occur.

The author greatly prefers the Beraneck serum (made in

Neufchatel) in small doses, gradually increased. Impatience for quick results reacts against the patient's welfare. A favorable reaction is not always dependent on the frequency of the injections, depending on the opsonic index of the patient. Early treatment is very necessary if good results are to be obtained. F. K.

### The Tuberculoma of Conjunctiva Bulbi and Its Diagnostic Difficulties.

Kramer, R., Vienna (*Zeitschrift f. Augenheilk.*, Band XXI, Heft 5, May, 1909), states that tuberculosis of the conjunctiva bulbi without involvement of the conjunctiva of the lids is a rarity and presents great diagnostic difficulties. The author reports a case occurring in a thirty-year-old woman, in whom the growth had first presented itself five months before. The tumor was situated near the lower outer limbus and was half of the size of a hazel nut. It was diagnosed as a malignant growth and removed with a lance-shaped knife from the sclera. The latter was very thin and in part was destroyed, showing a 2 mm. opening, through which the ciliary body protruded. A fine probe was passed into the anterior chamber, causing hemorrhages, showing iridodialysis.

The microscopic examination of the growth showed a number of nodes, the centers of which showed a tendency to necrosis, and were surrounded by epithelioid and lymphoid cells. Giant cells were but few in number. Between the nodes there was a dense, small-celled infiltration. Under tuberculin treatment (bacillus emulsion) the wound healed completely without the use of a suture, and the eye returned to normal. Locally, iodoform was used. F. K.

### A Further Communication Regarding the Exposure of the Optic Chiasm, the Hypophysis and the Region Anterior Thereto.

Lowe, L., Berlin (*Zeitschrift f. Augenheilk.*, Band XXI, Heft 5, May, 1909), relates the various ways of attacking the optic chiasm by the removal of the turbinates, anterior sphenoidal wall and the sphenoidal septum, etc., after preliminary splitting of the nose. He suggests another method, by pharyngotomia media, passing, however, through the suprahyaloid space, exposing the pharyngeal vault, after which the sphenoidal bone can be entered readily. F. K.

### Two Rare Diseases of the Eyelids.

GUTMANN, ADOLPH, Berlin (*Zeitschrift f. Augenheilk.*, June, 1909, Band XXI, Heft 6). The first cases reported by the author occurred in anemic young girls, and consisted of numerous round hemorrhages, resembling petechia, situated in the edematous lids. The author thinks that the hemorrhages were caused by temporary choking of the jugular veins, due to traumatism in patients suffering from moderate chronic anemia.

Gutmann also made a pathologic examination of several nodular growths, slightly elevated over the margin of the skin, and faintly reddish in color, situated on the lower lid, in a 33-year-old laborer.

The pathological diagnosis was a tuberculide, resembling a tuberculous growth. As the growth was not caused by the tubercle bacillus, but rather by the toxine of the same, the author suggests the name toxi-tuberculide for this variety of neoplasm. F. K.

### Clinical and Anatomical Studies of the Hole Formations in Partial Coloboma of the Optic Nerve.

LAUBEB, HANS, Vienna (*Zeitschrift f. Augenheilk.*, June, 1909, Band XXI, Heft 6). Lauber studied five cases of hole formation in the optic disk, and concludes that the circumscribed greyish area in the optic nerve head is to be regarded as a partial coloboma.

The colorings of these areas are due to contrast and shadows, and not to pigmentation. They are often associated with a conus downward and are closely allied to the latter anomaly.

They occasionally cause a paracentral scotoma, with or without contraction, of the peripheral visual fluid. F. K.

### Erysipelatous Infections of the Eyeball Following Operations.

CRAMER, E., Kottbus (*Zeitschrift f. Augenheilk.*, September, 1909, Band XXII, Heft 3). Cramer had a sad experience following the Hess operation for a partial ptosis of rather minor grade. A slight swelling of the wound edges appeared on the third day, and became much worse the following day, with board-like hardness of the skin. On the fifth day there was a great discharge of pus from the palpebral fissure.

The following day it was possible to explore the eyeball.

The author found a perforation 1 cm. long extending along the outer corneal margin, with prolapse of the iris. There was a second abscess in the sclera. The pus poured out of the eyeball for ten days, when the author decided to perform a plastic operation to close the defect of the cornea. It was necessary first to remove the dislocated lens and abscise the prolapsed iris. The flap did not unite immediately, but upon its replacement later it bacame fixed. The final result was that the eye became quiet, with good light projection.

The author believes that the streptococcic infection emanated from the nasal secretion. F. K.

### The Use of Thiosinamin in Several Diseases of the Optic Nerve and Retina.

JUDIN, K. A., Odessa (*Zeitschrift f. Augenheilk.*, September, 1909, Band XXII, Heft 3). The use of thiosinamin has gradually been extended until every field of medicine has been invaded. It is supposed to have especial value in atrophic diseases of the optic nerve and retina.

After trying thiosinamin in twenty patients with varying diseases of the optic nerve and retina, Judin found that it is useless, and in several cases the condition was made worse.

In this report he agrees with Otschapowski, who reported its use in 18 patients suffering from optic atrophy resulting from locomotor ataxia without benefit. F. K.

### The Differential Diagnosis Between Ocular Headaches and Those Produced by Inflammation of the Accessory Sinuses.

SNYDACKER, E. F., Chicago (*Klin. Monatsbl. f. Augenheilk.*, June, 1909). Snydacker believes that in from 7 to 10 per cent of the cases of headache and asthenopia which come to the oculist for refraction the symptoms are due to inflammation of the accessory sinuses. Such headaches are unilateral and neuralgic, appearing suddenly and violently; recurring regularly; often accompanied by outflow of pus from the nose or associated with distinct polypoid and hypertrophic changes in the nose. They are often produced by an attack of grip or coryza, and pressure over the frontal or maxillary sinuses shows great tenderness. The use of adrenalin in the nose relieves the headache, and X-ray examination may show the presence of pus in the cavities. E. A. S.

# ABSTRACTS FROM FRENCH OPHTHALMIC LITERATURE.

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### The Effect of Lumbar Puncture on Certain Amblyopias.

Ravaut, Paul, Gastrinel, P., and Velter, E., Paris (De l'effet de la ponction lombaire sur certaines amblyopies, *Gazette des Hôpitaux,* June 24, 1909, p. 903). The writers report a series of five cases in which they have observed a distinct effect on the vision following lumbar puncture. The first case was one in which puncture was done for the relief of cerebral pressure following brain tumor, and they state that there was nothing new in their observations, but simply confirmation of the observations of Drunalt, Lapersonne, Aubineau and others. In this case, the improvement in vision at the moment of puncture, and during the escape of the cerebro-spinal fluid, was very rapid, and seemed clearly to show the connection which existed between the functional symptoms and the hypertension of the cerebro-spinal fluid. They noted, as had already been shown by Babinski and Chaillous, that the improvement in vision was very transient. In the other cases they noted results not previously reported and believe them worthy of further investigation. These cases were of increased arterial tension, presenting cutaneous manifestations and various troubles of vision. Visual disturbances of various kinds due to increased tension have been known and described, but the authors desire to direct particular attention to those amblyopias without appreciable anatomical signs which occur in patients suffering from cutaneous lesions and which are probably due to the same cause, arterial hypertension, and which can be benefited, as can the cutaneous lesions, by lumbar pressure.

Case No. 1.—A woman had been operated on two years previously for sarcoma of the axilla with later general metastases. Recently had had headaches and slow and progressive loss of vision. Upon entrance to the hopital she presented numerous tumors, severe headaches, and constant vertigo. No localizing symptoms and no involvement of any organ of special sense except the eyes. Examination of the latter showed marked papilledema with hemorrhages. Vision 4/10. Latter rapidly decreased until in a few days she was barely able to count fingers. Lumbar puncture done and 7 c. c. withdrawn. No organisms present. While the fluid was being withdrawn, the patient noticed a spontaneous increase of vision, and in a few minutes she was able to distinguish clearly the faces of those around her. This amelioration of vision, concomitant with that of the headache, did not last more than 48 hours, when both began to slowly get worse. Examination three days after the operation showed no change in the fundus. One week later, functional troubles were aggravated. Patient could only count fingers at one meter, and examination of the fundus showed a marked papilledema. Patient died the next day, and autopsy showed tumors in each occipital lobe and one in the frontal lobe. No involvement of the optic nerve or the chiasm.

Case No. 2.—Woman entered hospital because of severe and recurring attacks of urticaria during the past six years. Sometimes two or three attacks would occur during the same day. Two years previously patient had bilateral chorioiditis and had later been operated upon for cataract O. S. and iridectomy for glaucoma O. D. Upon entrance to hospital loss of vision was complete, including light perception, and it seemed that patient had a true secondary glaucoma, following cyclitis. For the relief of the pruritis, lumbar puncture was made and 8 c. c. of fluid withdrawn. The pruritis ceased and there was a marked and sudden improvement in vision, patient being able to distinguish night from day, and having a vague sensation of the form of objects. In a little while the pruritis reappeared, and at the same time the vision disappeared. Another puncture was made and 10 c. c. withdrawn, with the same results as before.

CASE No. 3.—Patient entered hospital for a moist eczema of the hands and forearms, having had successive attacks for a number of years. Urinary examination negative. Complained of headache and vague visual troubles; no lesions discoverable in the fundus. With the object of relieving the pruritis, lumbar puncture was made and 12 c. c. removed. Two days after the puncture a complete disappearance of the pruritis and a clearly marked improvement in vision was noted. The patient could read his paper, a thing he had not been able to do for some time. When the patient left the hospital, six days later, his vision was markedly increased. Pruritis disappeared and cutaneous lesions were completely cured.

CASE No. 4.—Patient entered hospital because of continued attacks of eczema, extending over a long period. Complained at the same time of visual troubles, amblyopias, muscae volitantes, and could no longer sew. Patient could hardly count fingers. Small opacities in both lenses. Tension, field, and fundus normal. Puncture made to relieve pruritis; 12 c. c. withdrawn. The next day the pruritis was relieved, and the vision considerably and rapidly increased. The muscae volitantes had disappeared. Arterial tension diminished. Two days afterward patient was able to do embroidery. Two days later the tension again increased and the visual trouble reappeared a little, but the patient left the hospital.

CASE No. 5.—Patient entered hospital because of a moist eczema of the hands and forearms. For some time she had had trouble with vision and muscae volitantes, occurring especially coincident with the attacks of eczema. For some time she had been unable to sew. Temporal arteries sinuous. Heart and urine normal. Lumbar puncture done and 12 c. c. removed. Rapid and complete disappearance of the pruritis, drying of the eczema, and an immediate improvement of vision. One month later the patient was able to do fine embroidery and left the hospital. A month later the patient returned. The vision had remained good, and the pruritis had not reappeared, but the patient complained of headache and vertigo, due to arterial hypertension. Six months later she returned again, complaining of another attack of eczema and feebleness of vision. She would not enter the hosuital until two months later, at which time she had a moist and very itchy eczema and vision very bad. Slight congestion of the fundus and slight increase of ocular tension. Lumbar puncture was done and 8 c. c. withdrawn. Next day vision much improved. Ocular tension normal. Vision continued to improve until the patient left the hospital, two months after the operation.

In summing up, the writers call attention to the fact that cutaneous lesion and amblyopias frequently coexist and that this is especially the case in moist eczema. That both of these are accompanied by increased arterial tension and that both are relieved, at least temporarily, by lumbar puncture.

L. W.

### Twenty-two Cases of Orbital Tumors.

Rollet (Vingt-deux observations de tumeurs de l'orbite, *Archives d'Ophtalmologie,* June, 1909, Vol XXIX, p. 350), reports upon the cases of orbital tumors seen since his paper published in 1907. They are divisible into four groups: (1) Circumscribed and encapsulated tumors—1 fibroma, 2 mucoceles, 3 angiomata cavernosa, 1 carcinoma, 2 endotheliomata, 1 melanotic sarcoma. (2) Malignant diffuse tumors—1 endothelioma, 3 sarcomata, 2 epitheliomata. (3) Bony tumors of the orbital wall—1 case. (4) Four single angiomata and 1 aneurism. The cases are reported in full. If the only symptom was an exophthalmus, the author was accustomed to make an exploratory orbitotomy. His method of operating was to make a preliminary palpebral suture to protect the cornea. Then an incision of about 3 cm. was made, down to the bone, the aponeurosis was divided and the orbit was explored with the index finger. If a tumor was found to be encapsulated, it was shelled out and removed with special toothed forceps.

### Results of Tuberculosis of the Iris.

Fage (Terminasions de la tuberculose de l'iris, *Archives d'Ophtalmologie,* June, 1909, Vol. XXIX, p. 380), compares the statistics of seventy-three cases treated surgically with thirty-nine treated medically. In ten cases of excision of the tubercle there were eight cures and two phthisis bulbi. In thirty-nine cases treated medically there were thirty cures, three of which retained a certain degree of sight. From his statistics, he finds four methods of termination of the disease: (1) Spontaneous cure; (2) cure with phthisis bulbi; (3) perforation of the globe, leaving an eye disorganized and frequently painful and a focus for future dissemination of tuberculosis; (4) extension to the meninges or other organs, which in some cases seems favored by enucleation of the eye. C. L.

### The Agreement on the Determinaiton of Visual Acuity.

Landolt, E. (L'Entente sur la determination de l'acuite visuelle, *Archives d'Ophtalmologie,* June, 1909, Vol. XXIX, p. 337), reviews the work of the International Congress of Lucerne, confirmed by that of Naples. Two points are considered in the universal method of optometry: (1) The principle of determination of visual acuity; (2) the optometric chart. (1) Visual acuity is determined by the ability of the patient to recognize a solution of continuity in a black ring on a white background. The thickness of the ring and the extent of the break is equal to 1/5 of its diameter. The visual acuity is expressed by a fraction d/D, where D equals the distance at which the break is visible under an angle of one minute, and d equals the distance at which the patient can recognize it, the examination being made at a considerable distance from the chart. (2) In designing the test chart, it was necessary to select a symbol which would appear alike to the educated man, to the illiterate, and to the members of all nations. This want is completely satisfied in the broken ring. By having the defect located at different points on the circumference, a large number of figures can be made. C. L.

### The Relation of Congenital Buphthalmus to Hemihypertrophy of the Face.

Cabannes, Bordeaux (La Buphtalmie congénitale dans ses rapports avec l'hémihypertrophie de la face, *Archives d'Ophtalmologie*, June, 1909, Vol. XXIX, p. 368). For review of this article see Annals of Ophthalmology, Vol. XVIII, 1909, p. 862. C. L.

### New Pathogenic Theory of Nystagmus.

Sauvineau, Ch. (Nouvélle théorie pathogénique du nystagmus, *Archives d'Ophtalmologie,* July, 1909, Vol. XXIX., p. 416). For abstract of this article see Annals of Ophthalmology, Vol. XVIII, 1909, p. 863.

### Examination for Simulation, and an Appropriate Chart.

Terson, M. A. (Sur l'examen visuel de la simulation et sur une échelle appropriée, *Archives d'Ophtalmologie,* July, 1909, Vol. XXIX, p. 453), describes a chart which he uses in detecting maligners. It consists of letters (figures for illiterates) of different sizes, arranged regardless of any order, having previously tested the patient by the regular chart. The maligner now having no standard to go by, falls into the error of reading letters which he previously declared he could not, and vice versa. C. L.

### Glaucomatous States.

Abadie, Ch. (Des etats glaucomateux, *Archives d'Ophtalmologie,* July, 1909, Vol. XXIX., p. 401), reports two cases of status glaucomatus due to a retinochorioiditis. Injections of mercury and other appropriate treatment relieved the glaucomatous symptoms. The author advises that in all cases of ill-defined glaucoma a search be made for chorioiditic lesions, especially in the region of the corpus ciliare. In this location, they may have an irritative effect and cause an excess of ciliary secretion, with its resultant train of symptoms. C. L.

### Spontaneous Cure of Hypermetropic Corneal Astigmatism.

Lagrange, E., Bordeaux (De la guérison spontanée de l'astigme cornéenne hypermétropique, *Archives d'Ophtalmologie,* July, 1909, Vol. XXIX, p. 405), examined at long intervals eighteen patients with hypermetropic astigmatism, and found: (1) those who regularly corrected their error of refraction underwent no change; (2) those who intermittently corrected the error showed slight modification, while (3) those who did not correct the error were well along the road to cure. He believes that an astigmatism with the rule of adolescency is transformed in old age into one against the rule. His advice is not to correct hypermetropic astigmatism unless there are distinct troubles caused thereby. C. L.

### Electrical Cataract.

Le Roux, H., Caen (Cataracte par décharge électrique, *Archives d'Ophtalmologie*, August, 1909, Vol. XXIX., p. 523), reports the case of a man who was shocked by a current of 2800 volts. In addition to burns and loss of consciousness, there appeared in three months a cataract of the left eye, which went on to a full maturation. The right eye was never affected. C. L.

### The Reason of the Very Frequent Absence of Choked Disk in Tubercular Meningitis, in Spite of the Cerebrospinal Increase of Tension.

Dupuy-Dutemps (Cause de l'absence très fréquente de stase papillaire, malgré l'hypertension céphalo-rachidienne, dans la meningite tuberculeuse, *Archives d'Ophtalmologie*, August, 1909, Vol. XXIX., p. 465), found choked disk in only three out of thirty-five cases, although it is well known that the intracranial tension may reach 200-250 mm. of mercury at the lumbar puncture. Starting from the assumption that choked disk is due to compression of the vena centralis retinae, he reasoned that in order to produce this, the increase of intracranial tension must be transmitted through the sheath of the optic nerve. If this should be obliterated in any way, the vein would be unaffected, no matter how high the tension might be. Inasmuch as tubercular meningitis is characterized by the formation of an inflammatory exudate, and since this process is par excellence a basilar one, it can very well happen that the sheath of the optic nerve can be affected and its space obliterated. In several cases the postmortem showed that such an exudate surrounded the nerve as far as the optic foramen. On the other hand, the three cases accompanied by choked disk showed no basilar exudate. Attempts at injection and microscopical examination showed that there was no space left between the nerve and the sheath. This would seem to prove the author's theory. C. L.

### A Mechanical Theory of the Pathogenesis of Keratoconus.

Lagrange, Felix, Bordeaux (De la pathogenie du kératocone, sa théorie mécanique, *Archives d'Ophtalmologie*, September, 1909, Vol. XXIX., p. 529), does not agree with Parisotti that keratoconus is due to a weakness in the central area as compared to its periphery, and claims that a cornea which has lost its power of resistance throughout would assume a conical shape under the influence of intraocular pressure. This is due to the fact that normally the center of the cornea is 0.2 mm. thinner than the periphery. It is, therefore, the point of least resistance, when the cornea as a whole becomes weakened. C. L.

### Operation for Traumatic Cataracts, Especially Those Due to Occupation.

Bourgeois, Rheims (L'Opération des cataractes traumatique, spécialement dans les accidents du travail, *Archives d'Ophtalmologie*, September, 1909, Vol. XXIX., p. 534). Abst. in Annals of Ophthalmology, Vol. XVIII., 1909, p. 864.

### The Synoscope, a New Apparatus for the Establishment of Binocular Vision in the Treatment of Strabismus.

Terrien, F. (Le synoscope, nouvel appareil pour le rétablissement de la vision simultanée dans le traitment du strabisme, *Archives d'Ophtalmologie,* September, 1909, Vol. XXIX., p. 541), describes his instrument for use in divergent strabismus as follows:

It consists of a horizontal piece of wood, 3 cm. broad by 60-70 cm. long, provided at its anterior extremity with a vertical partition, as in a stereoscope, in order to individualize the two images. At the posterior extremity is a horizontal bar, 30-35 cm. long by 3 cm. high, on which slide two rectangular pieces of black cardboard, each carrying a test, for example the half of a V. When these pieces are sufficiently close, the eyes see only one letter when they are properly directed. If there is divergent strabismus, proper adjustment of the pieces of cardboard will give binocular vision.

In convergent strabismus, the vertical partition is replaced by a rectangular screen, in which is a transverse orifice 4x3½ cm., the whole located about 15 cm. from the anterior end. By arrangement of slides, the length of the orifice can be increased to 10 cm., while the height remains the same. C. L.

### Nervous Asthenopia Caused by Electric Light.

Waele, H. de, Gand (Asthénopie nerveuse par lumière électrique, *Archives d'Ophtalmologie,* September, 1909, Vol.

XXIX., p. 567), reports several cases of asthenopia directly traceable to the fact that the patients have been subjected for some time to the action of the arc light. No refractive error could be found. Wearing of yellowish tinted glasses relieved the patients. C. L.

### Isotonic Fixatives in Ocular Histology.

CANTONNET, A., Paris (Essai sur les fixateurs isotoniques en histologie oculaire, *Archives d'Ophtalmologie,* September, 1909, Vol. XXIX., p. 546), claims that the use of isotonic fixatives gives more distinct pictures of the ocular tissues, although the difference is not very great. The better definition is due to the absence of osmotic action during the process of fixation. For the cornea and conjunctiva he recommends sat. solution corrosive sublimate 50 cc., NaCl 0.7, or sat. sol. cor. sublimate 50 cc., NaCl 0.65, or 5% formol. For the other tissues (retina, etc.) he recommends corrosive sublimate, sat. solution 50 cc., NaCl 0.3, or formol 3%. C. L.

### The Scotoma from Medullated Fibers.

LANDOLT, M. (Le scotome des fibres a myéline, *Archives d'Ophtalmologie*, September, 1909, Vol. XXIX., p. 550), has taken the fields of vision of several patients with medullated nerve fibers in the retina. Some could not see any difference when the test object entered the area governed by the fibers. Especially was this true in cases where they were at some distanc from the disk. Two cases, however, showed a distinct enlargement of the blind spot, corresponding more or less distinctly in area with the extent of the fibers as shown by the ophthalmoscope. C. L.

### The Pathogeny of Primary Cataract.

SCALINGI, NOE, Naples (Pathogénic de la cataracte primaire, *Archives d'Ophtalmologie*, September, 1909, Vol. XXIV., p. 560), states that the transparency of the lens is due to the fact that the colloids composing it (soluble phacoprotein and insoluble phacoprotein) are in a hydrogelic state. Furthermore, it has been claimed the lens is hypertonic to its surrounding fluids, the osmosis being regulated by the capsular epithelium. Scalingi claims that absorption or loss of fluid does not cause opacity of the lens, for experiments have shown that it can absorb water or lose one-half of its water and still remain transparent. He lays down the following law: "Any cause capable of transforming the homogeneous system, consisting of the lenticular colloids and the fluids surrounding the lens, into a heterogeneous system can cause opacity of the lens." An example, plunging the lens in water or neutral alkaline solutions for a sufficiently long time, thus causing degeneration of the lenticular fibers and colloid, with limitation of the swelling. The hydrogelic substance may become heterogeneous by a lack of mechanical connection between the different layers of fibers. Acids cause a precipitation of the phacoprotein and thus establish a heterogeneity with consequent opacity. Salts, not by virtue of their concentration, but rather by their kathodic action, may cause opacity.

Applying these principles to diseases, such, for example, as produce an acid condition of the fluids of the body, can cause a cataract, e. g., uricemia, oxaluria, diabetes, etc. Glass-blowers' cataracts, also, are probably due to stasis of the circulation, with resulting collection of carbonic acid, and cataract.

C. L.

### The Knowledge of the Anatomy of the Visual Apparatus at the Beginning of the Eighteenth Century.

DAUTHUILE, A., Lille (Quelques notions d'anatomie de l'appareil visuel au début du XVIIIe. siécle, *Le Nord Médical,* October 1, 1909, Vol. XVI., p. 217), gives an exposition of what was known of the anatomy of the eye and its appendages at the beginning of the eighteenth century, as shown in a work published in 1748. First is considered those parts of the eye which can be examined without dissection, such as the caruncle; then, those that require dissection, such as the lacrimal sac. The third article deals with the external muscles, and the fourth with the membranes and humors of the ball. The fifth article gives a review of the known physiology of the eye.

C. L.

### A Contribution to the Study of the Complications of Pterygium.

CAMPOS, E. DE SOUSA, Brazil (Contribution a l'étude des complications du pterygion, *Clinique Ophthalmologique,* October, 1909, Vol. XV., p. 486), gives the history of a girl, whose left eye had been enucleated in Rio Janeiro eight years before.

the reason for this surgical procedure not being given. Four years ago a pterygium had made its appearance on the inner side of the limbus of the right eye, and had grown slowly until a year ago, when the caput increased rapidly in size and took on the aspect of a small tumor. The pterygium occupied a quarter of the circumference of the limbus, and had invaded the cornea beyond the middle line, so that even the commoner occupations were abandoned, and the patient complained constantly of tearing and pain. The base of the tumor was smaller than the surface, the tumor highly vascularized, with an irregular papilliform surface, and very friable. The head of the pterygium was easily detached from the cornea, but at the limbus the adherence was marked. The transparency of the cornea returned almost in full, so that the patient was again able to read and sew. A histologic examination of the tumor tissue was not made. Eighteen days after the first operation a smaller pterygium of the ordinary variety was removed from the outer side of the limbus; here the transparency was only partially restored. Menacho, quoting Panas, reminds us that wherever there is inclusion of epithelium, as we find it in pterygium, "the elements are present, whose abnormal proliferation will give rise to epithelioma." The well-known relative benignity of epibulbar epitheliomata is mentioned. The author then goes into the question of whether we are dealing in these cases with a transformation of a benign into a malign tumor, or whether this is simply a case of coincidence, as Morax would have it.

Another female, aged 35, presented at the base of a pterygium, near the upper border, a slight thickening in which two coarse hairs were implanted. The pterygium was more vascular at this point, but did not adhere to the sclera. A histologic examination revealed all the components of a dermoid cyst: skin, stratified epithelium, sebaceous glands and hair follicles. M. W. F.

### Fibrolysin in Ocular Therapy, Especially in Stenosis of the Lacrimal Duct.

Cauvin, Charles, Nice (La fibrolysine en therapeutique oculaire et notamment dans les retrecissements du canal larymal, *Clinique Ophtalmologique,* October, 1909, Vol. XV., p. 490), has employed fibrolysin with good results in the old cases of lacrimal stenosis, where there is simply tearing without mucoid secretion or inflammation of the tear-sac. A hollow de Wecker probe is first introduced, and the canal washed with boiled water while the probe is being slowly withdrawn. The probe is then reintroduced, and the contents of an ampoule of fibrolysin injected from an Anel's syringe in the same way. This treatment is given twice a week at first, then at longer intervals. Improvement is generally noticed after the second lavage. In inveterate cases this procedure will not give definite results, but an occasional lavage with fibrolysin will enable the patients of this class to avoid the long series of probings to which they were formerly subjected. A case of eight or ten years' duration is described, in which two lavages suppressed the tearing definitely; in another of fourteen years' standing one lavage widened the lacrimal canal so that a number 3 could be passed easily through a canal which had up to that time allowed a number one to pass with difficulty.

M. W. F.

### Paraspecific Therapy and Subconjunctival Injections of Sodium Chlorid in Ocular Infections.

Angiolella, Dominique, Lucera (La sérotherapie paraspécifique et les injections de NaCl dans les infections oculaires, *La Clinique Ophtalmologique*, October, 1909, Vol. XV., p. 477), praises the efficiency of injections of Behring's serum in ocular infections, and cites several cases in point. This serum was chosen because it can be obtained without trouble almost everywhere. Why this result should be obtained in cases of gonorrheal and trachomatous infection by injecting an antidiphtheritic serum the author does not attempt to explain, but he does affirm that 3 to 5 injections of 1,000 units of this serum, when injected at the onset of a gonorrheal infection, and again in a case of corneal ulcer, with hypopyon, due to trachoma, effected a cure in both cases. In other cases recourse was had to subconjunctival injections of NaCl when the repeated injection of serum produced no further effect. An abscess of the vitreous was not influenced by either mode of treatment, and exenteration became necessary, thus proving Darier's recent dictum that advanced abscess of the vitreous is refractory to all modes of treatment.

The surprising part of the article is the influence which these injections had on the pain in and around the eye: patients who had been unable to sleep, even when morphin and local applications of powdered dionin had been tried, became comfortable after one or two injections of the serum.

In view of the great anxiety which ocular infections cause both to patient and physician, Angiolella hails this remedy as a valuable addition to ocular therapy. M. W. F.

### Some Forgotten Means of Ocular Therapy.

Bonsignorio (De quelques agents oubliés en thérapeutique oculaire, *Clinique Ophtalmologique*, October, 1909, Vol. /V., p. 508), makes a plea for some of the older therapeutic measures which have been crowded out of use by the new armamentarium. The occlusive bandage is beneficial in all cases characterized by photophobia, photopsia, intraorbital or periorbital pains, such as keratitis, iritis, neuritis, acute glaucoma, etc. The eye is protected not alone from the light irritation, but also from the constantly recurring insult of winking. Revulsives, preferably in the form of sinapisms to the calves or the dorsal region, and of fly-blisters to the neck and between the shoulders, are of great value in the same class of cases. Believing that the eye affections of children are generally produced by some intestinal disorder, especially in children who have been put on a full diet, he advises the use of purgatives, bland teas and a diet of farinaceous foods, vegetables and milk. Small children should be put on a diet of milk only. In adults all sharp condiments, alcohol, heavy sauces, etc., should be eliminated, and mental and moral repose ordered. The patient should be kept quietly in a room of even temperature. The author asserts that these means will greatly hasten the subsidence of pain and irritation. M. W. F.

### Cataract Operations on the Aged.

Trousseau (L'opération de la cataracte chez la vieillard, *Clinique Ophtalmologique*, October, 1909, Vol. XV., p. 497), explains the seeming incongruity of his title, inasmuch as cataract operations are generally performed on the aged, by stating that he means persons of low vitality; subjects in whom the physical and moral activity is at such a low ebb that any strong emotion or change in habits upsets the regular play of the functions and leads to a complete dissolution. A searching medical examination should precede the operation, and, should the prognosis as to life-expectancy be unfavorable, an operation should be refused. Operation should also be refused those who have passed through a brain insult, even of the lightest kind. Great caution is necessary in those who are subject to pulmonary congestions. The examination of the urine is important, especially in regard to the amount passed, and an operation should not be done when the quantity passed is small, whereas it may be freely done in diabetic and albuminuric subjects. The operation should be earnestly desired by the patient, both lenses must be cataractous, and the blindness almost complete.

The accidents to be feared during operation are hemorrhages from the iris, or expulsive hemorrhages from the globe. These hemorrhages from the globe are due to the collapse of the cornea or of the globe, and, as this collapse is invited by the free use of cocain, the latter is to be avoided. After the operation prolapse of the iris is often brought on by cough or restlessness. The corneal flap heals very slowly, due to corneal sclerosis, and secondary ocular hemorrhages are more frequent than in ordinary cases. If a binocular bandage is used delirium is apt to come on the first to third night; the unoperated eye should at once be freed and some light admitted to the room. Diabetic coma or cerebral hemorrhage coming on within twenty-four to forty-eight hours may be due to postoperative shock or may be a mere coincidence. Pulmonary congestion or pneumonia is to be feared in the very old, as a result of dorsal decubitus: they should, therefore, be gotten into the sitting position as soon as possible. A daily examination of the urine is a necessity, and the patient should be put on milk and diuretics as soon as there is any marked diminution in quantity.

M. W. F.

# ABSTRACTS FROM ITALIAN OPHTHALMIC LITERATURE.

BY

V. L. RAIA, M. D.,

PROVIDENCE, R. I.

### Etiology and Surgery of Strabismus-Pseudotendinous Stretching of the Muscles.

FERRI, L. (*Annali di Ottalmologia,* Anno XXXVIII, Fasc. 5.) For a rational treatment of strabismus we must be guided by the etiological factors, which have been studied very carefully since Donders published his researches on the subject. According to these, strabismus is an alteration of the function of convergence. In internal strabismus there is an excess of convergence with conjugate lateral deviation, while in external strabismus there is a defect of convergence with conjugate lateral deviation. In the initial stage of the affection, we are apt to find only functional alteration of convergence, but later on, gradually, a real anatomic alteration takes place, with contraction of the tendon and muscle of one side and stretching of the opponent. In inveterate cases the function of convergence is entirely lost, and there remains only conjugate lateral movements of the eyes. According to these stages of the affection the treatment must be different. In the first stage optical treatment is sufficient (correction or refraction, mydriatics) to reestablish a normal relation between convengence and accommodation, so that their near points coincide. When the antomic stage is reached—that is, when contraction of the muscle and tendon have succeeded—then we must have recourse to surgical intervention. If vision is pretty good, the results will be very satisfactory, but if the case is an inveterate one, with great contraction of the muscle, binocular vision is never to be hoped for, although we may obtain the straightening of the visual lines. According to the author, operative intervention in the stage of functional disturbance of convergence is apt to produce hypercorrection. Every case of strabismus to be treated ought to be studied accurately, as follows:

The field of fixation in the horizontal direction, the difference of deviation when the eye looks at distance and near, with full and no accommodation at all. The field of fixation is normal in the first stage, then it deviates, and in old cases is really restricted. The additional angle of strabismus, which is that additional deviation when the eye looks at an object near, never surpasses 8-10°, and is always decreasing, until it may disappear when the anatomical alterations have reached the highest degree.

The aim of the operative acts in internal strabismus is either to straighten the eye globe by decreasing the power of the muscle toward which the eye turns by lengthening the same, or by advancing the muscle or the capsule toward the periphery of the cornea of the opponent muscle. Stretching of the muscle has been abandoned by all the surgeons as impracticable. There remains tenotomy, which in general is used by most of the operators. The author, when internal strabismus is accompanied by retraction and anatomical alterations of the muscle, performs tenotomy of the internal rectus of the fixing eye and of the deviating one. Dr. Ferri gives the following explanation: Tenotomy of the internal of the good eye produces diminution of the function of convergence in the same, and when its contraction is required, a more powerful nervous impulse is sent to it, which is felt also on the external of the deviating eye, for which fact only the strabismus disappears.

At present there are some who believe in the exclusive use of the internal tenotomy, and others in the advancement of the external rectus in internal squint. At the head of these latter is Landolt, who would like to see tenotomy absolutely abolished. The author of the present article is of contrary opinion, thinking that advancement is a complementary operation in certain cases of tenotomy, which he thinks the most rational, as it corresponds more to the etiological factors, excess of convergence in the internal and defect in external strabismus. The retraction of the caruncle, exophthalmos, deviation of the opposite side, real paralysis of the internal rectus after tenotomy of this muscle, are due to excessive separation of the capsule laterally at the muscle from the sclera.

V. L. R.

### The Opsonic Theory in Relation to Ophthalmology.

Pignatari, Roberto (*Annali di Ottalmologia*, XXXVIII, Fasc. 6-7). This article is nothing else than a recapitulation of what Prof. Zur Nedden has extensively written lately on the subject.

The opsonic index of the secretion of blenorrhagic conjunctivitis and of the other inflammations due to diplobacilli, pneumococcus, Koch-Weeks' bacilli, has been proven by experiments, the opsonins making here their appearance from the blood, while they are absent in the normal secretion of the conjunctiva. The more acute the inflammation of the conjunctiva is, the more active is this passage from the blood. The lacrimal secretion and the secretion of the sac in dacryocystitis never show their presence. After paracentesis of the anterior chamber in serpiginous ulcer the corneal parenchyma becomes abundant with opsonins. In a normal eye a paracentesis of the cornea produces only for a few hours traces of opsonins in the new aqueous humor. After inflammatory processes of the cornea, anterior chamber, vitreous, and following subconjunctival injection of saturated solutions of chloride of sodium, opsonins make their appearance in the anterior chamber, while the arrest of the blood circulation is without effect. The inflammatory processes of the vitreous increases its opsonic index, while those of the anterior segment of the eye are without results.

To show the phagocytosis, the leucocytes of the blenorrhagic conjunctivitis are very useful, while those of purulent dacryocystitis, of the pus in the vitreous, etc., are not. For these researches, according to Zur Nedden, the proper quality of leucocytes is of capital importance, and the virulence of the bacteria is not to be neglected, the most virulent being also the less accessible to phagocytosis. Morax Axenfeld's diplobacillus, on this regard, is the easiest to be affected, while pneumococcus and streptococcus now show the opsonic effect in a short time, now after a long time. Experimenting in this manner methodically, we shall convince ourselves that the passage of the opsonins in the conjunctival secretion and in the parts of the eye devoid of blood vessels take place according to well-defined laws, the importance of which in the curative process of the infective diseases of the eye cannot be denied. V. L. R.

### Photoelectric Ophthalmia—Historic Review and Clinical Cases.

Pasetti, Giuseppe (*Annali di Ottalmologia,* XXXVIII, Fasc. 6-7). The author of this paper has collected the most important cases which have been reported by the different writers since electricity has been used in our industries, and has added to these some personal observations. In all his cases the sudden formation of a short circuit and the appearance of a brilliant light are to be .blamed for the alterations on the lids, conjunctiva, cornea, lens and retina. Dazzle, photophobia, lacrimation, were very common symptoms and with these contraction of the field of vision for white and colors. This latter study could be only accomplished through instillations of cocain and adrenalin, on account of the troublesome symptoms already spoken of. To what is due all this? The brilliant light of short circuits acts in this respect through its numerous ultra violet rays. Those who are subject to these injuries have been advised to use yellow glasses, which, as is well known, limit the passage into the eye of the chemical rays of light. V. L. R.

### Organic Combinations of Silver-Protargol, Argyrol, Saphol in Ocular Therapeutics.

Pignatari, Roberto (*Annali di Ottalmologia,* Anno XXXVIII, Fasc. 6-7). The author has exhaustively studied these silver preparations in the laboratory and in the clinic, and has drawn from his researches some valuable information. By uniting 3 c. c. of protargol, argyrol, each 20%, and saphol 5%, with 1 c. c. of different culture (staphylococcus, streptococcus, bacterium coli, diplobacillus of Friedlaender) and transplanting the mixture so made on agar, this constantly remained sterile with protargol, while argyrol and saphol showed germicidal power, but very much less than the former. In regard to the aseptic power of the same preparations, Dr. Pignatari made diluted solutions in bouillon 1 to 3000, 1 to 5000, 1 to 10,000, and on these transplanted cultures of the same pathogenic germs. No colonies of bacteria developed, so that the conclusion is that even very weak solutions are highly aseptic. Strong germicidal substances, while they kill the germs, alter also the cellular protoplasm and, according to Zur Nedden, do not constitute an ideal remedy. Rather than to the antiseptics we must direct our attention to the blood serum, which is the principal agent for the restitutio ad integrum. The instillations of this are useless, because it acts superficially and must be injected into the tissues, where it kills the germs and irritates, producing a favorable edema. Zur Nedden explains that in this manner are obtained beneficial results with the injections of common salt, of sublimate, air, these acquiring regular opsonic power. The author of the present article has made original investigations with solutions of protargol, argyrol, saphol, 1 to 1000, in which dilutions these substances are not germicidal, but aseptic, to see what opsonic power they possess. By substituting in his experiments the blood serum with the mentioned preparations, he observed a true phagocytosis. They either act like regular opsonins, or stimulate the beneficial action of the opsonins of the blood serum.

Protargol, argyrol, saphol must not be dissolved in hot water, and their solutions must be kept in yellow bottles, to avoid decomposition under the influence of the light. While nitrate of silver coagulates the albumen of the tissues, which coagulation forms a barrier to the further penetration of its action, the organic silver combinations already spoken of are not modified, and consequently their action is more intense and deeper. The clinical observations have shown that they do not possess any astringent power, and in this regard they differ greatly from silver nitrate, to which we must have recourse when we want to reduce dilatation of blood vessels and papillary neoformation of the conjunctiva after secretive conjunctivitis. In purulent conjunctivitis, blenorrhagic or otherwise, the numerous cases studied on the subject prove conclusively, according to our author, the superiority of protargol on the other two preparations to arrest the purulent secretion. Argyrol and saphol are really useful, on the other hand, in catarrhal affections of the conjunctiva with scant secretion, and are tolerated by even the most sensitive patients.

V. L. R.

### Experimental Researches on the Excitability of the Optic Nerve in Man.

Calderaro (*La Clinica Oculistica*, June-July, 1909). Experiments on the human optic nerve have been scarce. Our author has taken advantage of many cases of exenteration of the orbit and enucleation of the eye bulb for malignant tumors with fairly good vision to apply mechanical, electrical, chemical stimuli on the denuded optic nerve. In all these cases the patient never experienced any luminous sensation, but always pain, even when the nerve was cut in enucleation. These stimuli are not perceived by the cortical centers, neither do they travel centrifugally to the retina. Probably this is due to the fact, according to Dr. Calderaro's hypothesis, that the visive function of the optic nerve is not due to a mechanical movement, but rather to photochemical alterations of the retinal epithelium and the cones and rods. Such alterations take place under the influence of undulations of the ether (light), endocular pressure (pressure phosphenes), circulatory disturbances of the inner part of the eye and inflammation of the chorioidea and retina (symptomatic chromatopsiae, photopsiae). Whatever the cause which produces these different sensations, the intermediary of the retinal elements is indispensable. It was thought previously that any kind of stimulus applied on the optic nerve would produce a luminous sensation. Mueller long ago formulated a law which can be expressed with these words: all the sensitive nerves when stimulated answer with a sensation corresponding to its special nature. Helmholtz believed that the seat of the specific energy of the visual sensation was in the terminal extremity of the optic fibres, in the cortical centers, and considered the op. fibres as simple conductors capable of stimulating three different kinds of cortical cells, for which the perception of blue, green and red is produced. The fibres in the optic nerve are the same, and transmit in the same way a stimulus. The differentiation depends on the quality of the cells in the cortical center stimulated by them. Wundt placed in the peripheric organ the specific region of the luminous sensation. From birth it transmits to the luminous fibres a sensation which, arriving to the cells of the cortex, educates them and adapts them for the perception and just valuation of the stimuli elaborated on the retina. That the retina is the specific place of the visual sensation, and not the cortex, can be corroborated by the fact that, while the retina at birth has a well-defined structure and very different from embryonic tissues, the cortical elements are not clearly differentiated.

V. L. R.

# ABSTRACTS FROM RUSSIAN OPHTHALMIC LITERATURE.

BY

A. Barkan, M. D.,

San Francisco, Cal.

### Dionin in Eye Practice.

Selenkowski (translated from the German report in the *Zeitschrift für Augenheilkunde*), reports in the Ophthalmological Society at St. Petersburg on dionin in eye practice. He refers to the dissertation of Batalow, and recommends dionin as promoting the absorption of lenticular masses such as are found in traumatic cataracts, and also in cases of hemorrhage in the anterior chamber of vitreous body. Furthermore, he recommends the remedy to clear up corneal opacities, especially parenchymatous corneitis; also, as an anaegitic in glaucoma. In the last case it is supposed to help the outflow. In inflammatory processes, such as serpiginous ulcer, and similar affections, it is said to increase the contents of antibodies in the aqueous humor, and it is supposed to act also in analogy with salt injections. The author uses dionin in solutions of from 5 to 10%, and unguents also in substance.

A. B.

### Atrophy of the Optic Nerve Following Use of Atoxyl.

Kalaschnikow (translated from the German report in the *Zeitschrift für Augenheilkunde*), speaks of atrophy of the optic nerve following the treatment of syphilis by atoxyl. He gives a review of the development of atoxyl treatment by mentioning Koch's observations of the sleeping sickness of the negro, and the amaurosis observed in these cases. He cites a case of optic nerve atrophy that has become known following the treatment of syphilis with atoxyl. The picture observed is exactly the same in all cases—namely, the disturbance of vision to a high degree, narrowing of the visual field, and narrowing of the arteries. In his case, the man treated was 35 years of age, and had undergone atoxyl cure at the hands of a nurse assistant because of syphilis. There were 10 injections given of a 10% solution. This case is supposed to be the sixth in all. Control of the eyes, of the visual acuity, and the fundus are urgently required with each treatment of atoxyl. A. B.

### Parenchymatous Keratitis After Injury.

Natanson, A. (translated from the German report in the *Zeitschrift für Augenheilkunde*), discusses the question of parenchymatous keratitis occurring after an injury to the eye in individuals afflicted with hereditary syphilis. During the discussion, Awerbach states that he has seen twice parenchymatous corneitis in hereditary syphilis in connection with a trauma; once in the case of a child, and once in the case of a druggist whose eye had been injuired by a crystal of a drug during the process of preparing the same. The inflammation having healed within two months, there remained behind a central saturated cornel spot, probably the original place of injury. Mikewitsch speaks of a boy ten years of age, in whose eye parenchymatous corneitis had formed just after injury. Logetschnikow remembers similar cases of post-traumatic deep keratitis, and thinks that an injury as the moving cause for parenchymatous corneitis exists. A. B.

### Pulsating Varices in Both Orbits.

Natanson, A. (translated from the German report in the *Zeitschrift für Augenheilkune*). These remarks refer to a case which the author has demonstrated on the 29th of April, 1908; the case being one of orbital tumor with supposed exophthalmos (vide *Klin. Monatsb.,* 1908, 1, p. 565). The diagnosis of a rupture of the carotis within the sinus cavernosus has verified itself, for now there are pulsating enlargements of the venous ophthalmus superior present in both orbits upward and inward. There is a strong cystolic noise present in either side, and distinct cyanosis within the distributing area of the anterior facial veins. The author proposed an orbital operation according to Natanso. This was refused by the patient. A. B.

### A Case of Cysticercus of the Vitreous.

LEPNIN (translated from the German report in the *Zeitschrift für Augenheilkunde*). The author describes a case of successful extraction of a zystizerkus vesicle from the vitreous. He gives the vision before the operation, namely, perception of the motion of the hand. The tension was normal. After the operation the visual acuity was the same. A. B.

### Chalky Cysticercus of the Orbit.

PASCHELL, C. (translated from the *Archives d'Ophthalmologie*, Vol. 28). The patient was a woman 35 years of age. She suffered from lancinating pain in the orbit, nausea, and sleeplessness; four months later swelling of the lids and fog before the eye, prominent bulb, swelling of the papilla. The vision of both eyes, 6/6, improved by means of iodid of potash. Seventeen months later there appeared a prominence of high degree, and dislocation of the bulb downward. A hard tumor could be felt. Atrophy of the papilla and retinal detachment followed. After enucleation of the bulb a cyst became visible adjoining the nasal wall of the orbit, and reaching to the optic foramen. It was removed. Examination revealed a cyst with firm walls which included in its interior a vesicle of delicate walls the size of a walnut. In the latter, there was a vesicle the size of a bean, the so-called receptaculum capitis, having white firm walls in which one could recognize a long, circumscribed thickening —the skolex. The bulb was compressed from behind by means of the cyst. Histologically, the outermost membrane showed four layers, all of which were rich in leucocytes and eosinophil mylocytes. Next to these were found "mastcells" and polynuclear leucocytes. The vesicle that had attained the size of a walnut had chalked walls, and the innermost vesicle was devoid of structure, and chalked. The structure was similar to the cysticercus cellulosa of the brain. The case is interesting because of the element of chalky formation in the case, and because of the follicles and eosinophil cells in the outer wall of the cyst. A. B.

# SOCIETY PROCEEDINGS.

## SECTION ON OPHTHALMOLOGY.

## COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting, October 21, 1909. Dr. Wm. Zentmayer, Chairman, presiding.

### Proptosis of the Eye, Probably Due to Tuberculous Involvement of the Orbit.

Dr. S. D. Risley presented for study a patient who had been assigned to his Wills Hospital service on August 10, 1909, with a proptosed right eyeball, marked edema of the lids, and chemosis of the conjunctiva, the thickened fold of which covered the greater part of the cornea. He suffered from severe headache. The conditions grew worse, notwithstanding the use of large doses of potassium iodide, followed by mercurial inunctions. On September 1 the parotid gland enlarged to the size of an egg and the right jaw with its ramus was swollen and hard, presenting all the features of a periostitis. The teeth were healthy and there was no evidence of alveolar disease. The tongue was large, pale, and indented by the teeth; the nose was large and pendulous, the lips thick, the finger ends clubbed, and the nails purplish. The skin was muddy and opaque, the man listless and stupid. He was then placed in bed and the pulse rate and temperature recorded every four hours for two days, and no variation from the normal discovered. He then received a hypodermic injection of one minim of old tuberculin. The following day there was general malaise and marked general and local reaction lasting two days. The man's general condition then improved, but in ten days there was no notable improvement in the local conditions, but the increase in size, which had before been rapid, ceased. A second dose of one minim was then injected, which was also followed by both local and general reaction. After its subsidence, the local and general conditions rapidly improved, so that the patient wished to leave the hospital, and objected to a third injection, as "it made him sick," but finally consented. The reaction was very slight and transient. On October 4 his personality had undergone the most marked transformation; the proptosis, edema, chemosis, and the deformity produced by the enlarged parotid and swollen jaw had entirely disappeared. On October 9 the man returned to his work.

Dr. Hansell thought Dr. Risley was to be congratulated on his splendid success in the treatment of his case—restoring a very sick man to almost perfect health. Most of us would assume, on the first inspection of the patient, that he was suffering with gumma of the orbit, and would have him put under treatment for that affection. The pronounced reaction following the injections of tuberculin, the rapid absorption of the deposits in the gland and in the orbit, in short, his speedy recovery, therapeutically prove that the diagnosis of tuberculosis of the orbit was correct.

### Detached Retina Replaced by Scleral Puncture, with Recurrence.

Dr. J. Norman Risley reported a case of spontaneous detachment of the retina with only light perception in the upper portion of the temporal field, replaced by posterior sclerotomy in upper temporal quadrant of ball, pressure bandage, pilocarpin hypodermically and subconjunctival salt injections on alternate days, and absolute rest in bed for three weeks, with the result of 6/15 vision and normal field. After three weeks the patient returned with gradually failing vision, until at present he can count fingers only, and there is a general recurrence of the detachment of the retina except immediately surrounding the disk.

Dr. Turner cited the case history of a man, aged twenty-nine years, who in August of this year had a fall from a bicycle which caused retinal detachment in an eye from which a soft cataract had been removed in 1903. On September 7 the vision with a correcting glass was 6/7 +. The visual field revealed a detachment of the retina up and in, extending from the fiftieth degree above to the horizontal meridian. On October 7 the vision was 1/40; tension was normal or slightly increased for an aphakic eye.

The patient's other eye was enucleated in 1903 for a probable growth.

Dr. Turner requested some suggestions as to treatment.

Dr. Ziegler believed that scleral puncture was the only surgical procedure that would relieve retinal detachment. He related one case of extensive detachment that recovered and retained useful vision. He thought the value of scleral puncture lay in the adhesions that it created between the retina and chorioid. Each puncture is followed by plastic inflammation that glues the tissues together. He made the suggestion that multiple puncture might encourage reattachment at several points. He employs De Wecker's procedure, plunging the Graefe knife through the sclera, draining off the subretinal fluid, puncturing the retina, and turning the knife at right angles as it is withdrawn. This promotes leakage long enough for adhesion to take place.

Dr. Zentmayer said that in his experience the results of the operative treatment of detached retina had been no better than those secured by rest, bandage, atropine and sweating. He would not expect operative treatment alone to be of service except in traumatic cases, as in other cases the cause of the detachment was either a local disease or a systemic affection, neither of which would be removed by the operation, so that any benefit derived by the operation would of necessity be temporary.

### A Case of Temporary Monocular Amblyopia, Possibly Due to Embolus in the Optic Nerve.

Dr. Howard F. Hansell reported the case of a girl, the subject of chronic endocarditis, in whom vision of the left eye had suddenly become partially lost. Two weeks later, vision having undergone no change, she applied for treatment. A five days' course by mercury and iodide of potassium restored the vision to full acuity. The ophthalmoscopic findings were negative. No changes from the normal in the appearance of the disk; no pathological alterations in the caliber or course of the arteries or veins; no hemorrhages or patches of any kind, and no sign of exudation in the foveal region were manifest.

The diagnosis was tentative and was reached by exclusion. Hysteria was dismissed, because of the blurring of the entire field, the absence of sector defects or scotomata, or the reversal of the color fields, and the usual stigmata of hysteria; edema of the sheath and hemorrhage within the sheath and central retinochorioiditis, because of the persistently normal condition of the vessels of the nerve and retina; and cortical or cerebral disease of any kind for obvious reasons.

Dr. Hansell thought that valvular disease of the heart in his patient, one of long standing and quite marked, might be considered as the original cause of the amblyopia. The course pursued by the embolus of fibrinous material from a diseased heart was, of course, through the circulation, until it reached a branch of the central artery of the retina, and, being too large to enter any of the finer branches, was stopped in its course by the wall dividing the artery from one of its branches, thus interfering a little with the stream of blood as it was passing into the branch.

The stoppage of the blood created no doubt an edema of the fibers of the nerve, similar to that frequently seen in the retina following embolus of one of the branches. The function of the fibers of the nerve was thus temporarily destroyed, with the resulting deterioration of vision.

Dr. S. D. Risley said that he had followed with great interest Dr. Hansell's admirable and careful analysis of the unusual and complex clinical history he had presented. He could offer no other conclusion in explanation of the symptoms, certainly no more satisfactory explanation than that given by Dr. Hansell.

Dr. Ziegler believed that the cardiac symptoms in Dr. Hansell's case must influence the diagnosis. He recalled a case of embolus of the central retinal artery which was followed one week later by varying obscuration of vision in the other eye, which he believed was due to a second embolus hovering near this eye. For some reason it did not plug the vessel up, but only partly filled the lumen. Recovery occurred in the second eye, but vision was somewhat impaired.

He further stated that the symptoms simulated those visual obscurations caused by a semi-occluded sphenoidal sinus, in which there was vascular engorgement from mechanical pressure. He had seen such a case occur without apparent fundus lesion and followed by complete recovery.

### Parinaud's Conjunctivitis, with Unusual Complications.

Dr. Krauss reported a case of *Parinaud's Conjunctivitis with Unusual Complications*, occurring in a colored female, aged two and one-half years. The affection at first resembled an attack of purulent conjunctivitis, with broad ridges in the tarsal conjunctiva. Later, the latter were sharply outlined by a tenacious grayish exudate, which later cut the ridges into granulomata.

About three weeks after the beginning of the affection the lacrimal sac became acutely involved with free pus exuding from the right nostril.

The pus showed no microorganisms in smear or culture. After six months the conjunctiva was still thickened in the fornix, with watery discharge from the lacrimal sac. The glandular involvement was subsiding without undergoing suppuration.

### V-Shaped Iridotomy.

Dr. Zentmayer presented a patient on whom a *V-shaped Iridotomy* had been successfully performed. Several months previously a complicated cataract extraction had been performed and had been followed by a severe iridocyclitis, completely blocking all but a pin-point coloboma just behind the upper limbus. No difficulty had been encountered in cutting through the iris tissue and the capsule behind it. There was no marked reaction following the operation, and there is now a large V-shaped opening giving the patient a visual acuity of 5/20. The vitreous is filled with large, flocculent opacities.

Dr. Ziegler, at the suggestion of the chair, briefly described his operation of V-shaped iridotomy as follows: The knife-needle is entered at the limbus above, passed across the anterior chamber, swung 2 mm. to the left of the vertical plane, the membrane punctured by a quick thrust, and a sawing incision carried upward without making any pressure. The knife is then raised through the oval slit thus formed, carried across the anterior chamber to a point 3 mm. to the right of the vertical plane, and a second incision executed to meet the first just inside of its upper extremity. This forms a V-shaped cut which opens into a triangle or becomes more oval, according to the degree of resiliency present in the tissues. If the apex of the tongue is too stiff to retract, its base can be punctured and turned down and back, or the cornea may be incised below, and the iris tongue drawn out and excised.

Dr. Ziegler commended the excellent result achieved by Dr. Zentmayer. He believed that this operation would prove successful in 99 per cent. of all cases. He had used De Wecker's procedure in a few cases for special reasons.

Dr. Hansell stated that he was a strong advocate of Dr. Ziegler's operation for the incision of membranous cataract. He had performed it repeatedly and had yet to meet with failure. His last patient was operated upon for the extraction of senile cataract last June. The eye became infected and he believed that recovery was hopeless. However, the persistent treatment, with frequent instillations of argyrol, forced into the anterior chamber, checked the purulent process. Three weeks ago he cut the dense membrane in the pupil, and with Dr. Ziegler's knife secured a fine oval pupil, through which the man had good vision.

It seemed to him unnecessary in all cases to make the two incisions. When the membrane contracts sufficiently to form the large pupil following the first incision, he generally omitted to make the second.

Dr. Turner inquired of Dr. Ziegler concerning the probability of hemorrhage.

In reply to Dr. Turner's queries he said that hemorrhage was rare, but occurred where the membrane was vascular, or in certain cases where the tension was lowered by leakage of *aqueous*. As to the length of time he would allow to elapse for subsidence of the iridochorioiditis which caused the membraneous occlusion, he thought that two months would be an average convalescence, but this period might vary in different cases.

T. B. HOLLOWAY, M. D.,
*Clerk.*

# CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting of May 10, 1909. Dr. Frank Allport, President, in the chair.

## SYMPOSIUM ON OPHTHALMOLOGIC LEGISLATION.

### Examination of School Children's Eyes.

Dr. Albert E. Bulson, Jr., of Fort Wayne, Indiana, presented a paper on "Legislation Concerning Examination of School Children's Eyes," in which he emphasized the importance of creating a public sentiment in favor of eye tests for school children before we can expect to secure much legislation bearing upon the subject.

The importance of systematic examination of the eyes of school children is now appreciated by medical men and many educators, and in a number of States the Boards of Health and Education have endorsed and recommended the general adoption of the tests proposed. In Vermont, Massachusetts, Connecticut and Colorado the tests are made in compliance with laws requiring their use. In many localities teachers are testing the vision of school children, of their own volition, without suggestion or recommendation of their superiors. But there is still much work to be done before eye tests are generally adopted in our schools, and the most effective work is now being done in those communities where medical men have gone before teachers' associations and carefully presented the subject, or have demonstrated the value of the tests by practical application in the schools.

In those schools where the tests have received practical application the revelations are astonishing in showing to what an extent the so-called mental defectives and incorrigibles are due to remedial eye defects. In Philadelphia, for instance, it was found that 60% of the school children had eye strain or defective vision, and in many of these instances children were thought to be backward or mentally deficient, whereas the correction of the defects by properly adjusted glasses was followed by remarkable improvement in the work and conduct of these pupils. The Director of the Department of Public Health, in making his report concerning this work says that the tests have demonstrated that many so-called mental defectives and incorrigibles do not really belong to that category, and he emphasizes the fact that the expense incurred in making the tests and supplying glasses to those too poor to pay for them has been more than counterbalanced by the increased worth of an educated citizen over an illiterate one who may become a public charge, or whose earning capacity is so curtailed that he can contribute but a small amount to the support of the state. He further believes that in many cases such children would have joined the criminal class or in some way would have become a burden on the community.

To present these and similar statistics and pertinent facts before legislative bodies and school authorities will have much weight in aiding us in our efforts to secure appropriate legislation. But to effect an early and favorable consideration it is necessary to secure the cooperation of the parents of school children. The average legislator and the average member of a school board is not possessed of an over-abundance of generosity toward something that has not only the approval of, but is demanded by the public. Therefore, the subject should be discussed in all its details before numerous organizations, and particularly the various women's clubs and teachers' associations.

The task of educating the public logically falls to the ophthalmologist, who, by training and experience, is best fitted to present the subject in a comprehensive manner, and if one or more ophthalmologists in every community will take an active interest in the work it will not be long before the eye tests of school children will be a part of the curriculum of every school in the country.

Dr. Bulson favors the Allport plan, which provides that the tests be made by school teachers, or, if not by the teachers, by regularly appointed members of the Board of Health. If oculists make the tests, it is sometimes looked upon as an interference with private affairs, or it is charged that the oculist is working in his own interest (sometimes true), and the charge is reiterated by envious fellow oculists who have not been selected to make the examinations. If the examinations are made by teachers there is seldom any serious objection.

and for practical purposes the teachers in our schools can be readily taught to recognize the pronounced eye defects, and the latent errors of refraction will be noticed by the observing teacher if she notes the manifestations common to such conditions. Few teachers will be found who are not willing to go to the trouble of making the examinations when they once understand what can be accomplished in making their school work easier by raising the mental and physical standard of a large percentage of defectives who are a source of annoyance and extra work because of their defects. Every parent whose child has been benefited by the eye tests immediately becomes an ardent champion of the plan to make eye tests a regular feature in the schools. When public sentiment sanctions the plan, and the more progressive schools have put the plan into operation and demonstrated its value, then and then only will it be possible to secure general legislative enforcement of eye tests in our public schools.

### Examination of Eyes of Transportation Employes.

Nelson M. Black, Milwaukee, Wisconsin, read a paper on the "Visual Requirements of Transportation Employes." (Published in full, page 28.)

### Legislation Concerning Opticians.

Dr. E. V. L. Brown discussed the present status of Optometry Legislation. Bills licensing opticians in Illinois have been defeated in 1905 and 1907 through the efforts of this society, and a strong effort is being made to defeat the bill before the present session of the Legislature. Dr. Brown recommended in case this effort was once more successful, that a compromise between the society and opticians be agreed upon and made a law at the next session. Under any such agreement the society should insist that the State Board of Health be authorized to examine and license opticians to fit glasses under certain restrictions which mean unequivocally that such fitting of glasses is a part of the practice of medicine. State Boards have precedent in the examining and licensing of embalmers and midwives. The State of Texas has such a law concerning opticians.

Dr. J. Elliott Colburn said that about thirty years ago he addressed a school teachers' meeting in New York State on the subject of examining the eyes of school children, and he has done this repeatedly since. He has always found the teachers anxious to learn how to do this work and willing to cooperate with physicians. He believes that eventually it will come to this, that every child on entering a school will be required to present a certificate of examination from a competent oculist as to the condition of its eyes. The examination is quite as important as that for vaccination or any other condition. As now conducted, the examination is liable to give rise to many sources of error, because children who have eye troubles, such as astigmatism, will pass the teacher's examination by nipping the lids, so that the child can read 20-30 on the test cards, even though it may have a high degree of astigmatism. In one case a child received minus glasses from an optician for a hypermetropic astigmatism. Of course, the child could see better, but only with great effort. Therefore, it is essential that the eyes be examined by a competent refractionist, who will furnish a certificate. This is a very important matter; one that cannot be overestimated. Dr. Colburn has seen children who were stumbling, blundering idiots, transformed into bright, competent students by proper glasses. He also agreed with Dr. Black that automobile drivers should be licensed with respect to their eyesight.

Dr. W. F. Coleman agreed with Dr. Brown's suggestion with reference to the licensing of opticians. The whole question is, Are these men practicing medicine? The courts have decided that they are not; therefore, the courts should be instructed correctly as to what constitutes practicing medicine. The law says that anyone prescribing for an infirmity or a deformity is amenable to the law unless he is a physician. The prescribing of glasses is done for the correction of an infirmity or a deformity, and therefore such action should be considered practicing medicine. The legislators do not understand this question properly, nor do they give the matter much thought. Why should physicians be required to take a four years' course and then secure a license, in order to be permitted to practice medicine, when a layman may fit glasses, which is really practicing medicine? Whether they be opticians or osteopaths is of no consequence. A man might elect to treat the nose and throat without taking a medical course and ask for a license. Or he may limit himself to amputating the legs or to treat

State Board of Health, and advised that the committee apumbilical diseases without taking a course in medicine, and ask for a license. No man should be permitted to limit his practice in such a manner, and therefore the optometry bill is unjust and unfair.

Dr. Paul Guilford has done considerable railroad work during the past eight or nine years. He said that there can be no discussion as to the absolute necessity of examining transportation employes as to vision and color perception. Most railroads require vision of 20-20 in each eye without glasses of new men, but after men have been in the service a certain number of years and their vision falls below the standard, they are required to wear glasses. An old employe wearing glasses ordinarily is allowed to have a vision of 20-40 in one eye, provided the other eye is 20-20 with glasses. Unfortunately, many railroads allow some subordinate to make the preliminary examination. They test the vision and the color sense, but there is no doubt that these men should be examined by a consulting ophthalmologist. As to whether old employes should be allowed to wear glasses, to bring the vision to normal, and be retained in the service and be in line for promotion, it certainly would be hard on these men to be dropped from the service when their vision falls below the standard as the result of age. If glasses can correct the trouble, these men should be retained.

Dr. Clark Hawley had two interesting personal experiences showing the effect of strong light on the eyes. Recently he was forced to face a very strong electric headlight on a street car, and became so blinded that he was forced to stop for a time before he regained his vision sufficiently. At another time he purposely looked directly into a very powerful electric light in front of his office building, and the result was that he was practically blind for about five minutes, and for about fifteen minutes he was unable to read anything. He has a patient now whom he is sure would absolutely lose his vision if he were compelld to face a very strong light.

Dr. A. E. Bulson (in closing) said that the only thing to do to have eye tests introduced in the public schools is to create a public sentiment in favor of the tests. The plan outlined in his paper would, he thought, be effective in that direction.

As to optometry legislation, he agreed with the suggestion made by Dr. Brown to put this matter in the hands of the pointed by the society should endeavor to shear the bill of as much harm as possible, so that if it should pass it will not work a hardship on anybody.

Meeting of October 11, 1909, the President, Dr. Frank Allport, in the chair.

### Punctate Retinitis.

Dr. O. Tydings exhibited a patient, 17 years old, first seen August 14, 1909, who presented in the retina between the superior and inferior temporal arteries, an opaque edematous area. The macula had the appearance of central thrombosis. Vision was 20/50. Two days afterward vision had fallen to 12/200 with a central scotoma for color, and it continued to diminish until within three or four days it was down to fingers at two feet. Then it commencd to improve and now vision is 20/40 plus. The patient accepts a low sphere, about plus 50, the retina has assumed its normal appearance, except for a few punctate spots. Urinalysis was negative, and there was no constitutional taint so far as could be ascertained. There were a few spots in the left eye, but not of the same kind. The treatment consisted of a course of mercury and iodin internally.

Dr. Henry Gradle said that the term retinitis punctata is applied to varying conditions. Continental writers apply the term to retinitis pigmentosa. Cases of this kind are of a transient character; they are not an entity either etiologically or pathologically. In this case the lesion seemed to be in the retina, although in some cases it involves the chorioid. The logical thing is to continue the alterative treatment.

On inquiry as to whether there was any sinus trouble, Dr. Tydings replied that there was not.

Dr. C. A. Westcott had seen a few cases such as those mentioned by Dr. Gradle, but there was not such a marked reduction in the vision as in Dr. Tydings' case.

Dr. Tydings said that the lesion in this case was very marked and vision was markedly reduced. Duane says that these cases have the same pathologic basis as retinitis proliferans, but that did not seem to be true in the present case, which Dr. Tydings believes to be an edema which will clear up entirely.

### Complete Traumatic Aniridia.

Dr. Paul Guilford presented the following case:

John W., aged 22 years, carpenter, was first seen at St.

Luke's Hospital, August 12, 1908. On the same date, while at work under a freight car, the boring-bit he was using slipped from his hand as he withdrew it from the wood, the point of the bit striking and penetrating his left eye.

Examination showed a lacerated wound about 5 mm. in length, running perpendicularly about midway between the center and temporal limbus of the left cornea. The anterior chamber was filled with blood. Conjunctival engorgement. Tension soft. Vision equaled 0. He was put to bed and the eye treated with boric irrigations, atropin and arygrol. The following day the wound had closed, and there was very little inflammatory reaction. No pain.

The blood-clot in the anterior chamber rapidly absorbed, and it was then discovered that the iris was entirely absent, having been completely torn away at the time of the injury. The lens was uninjured and could be seen clearly in its entire outline in its normal position. The vitreous was clear and the fundus normal. The eye made a rapid and uninterrupted recovery, and the patient was dischargd from the hospital August 29, 1908. Vision equaled 10/200. Scar at site of wound. September 8th with +1. D. S., V. equaled 20/100. September 18th V. equaled 20/200 plus .75 combined with plus 1.50 axis 90 degrees equaled 20/70.

He was told to return to work and report to me once a week for observation.

October 5th V. L. equaled 20/70 plus .75 combined with plus 1.75 axis 100 degrees equaled 20/40 plus.

October 19th V. L. equaled 20/70 plus .25 combined with plus 1.75 axis 105 degrees equaled 20/30 plus.

This correction was ordered for the left eye and was worn with comfort for several months. He had been wearing a plain smoked lens occasionally to protect the eye from bright sunlight.

December 24th a flying nail struck him over the closed eyelids of the left eye. Eye was somewhat inflamed and painful. Under dionin and hot stupes eye cleard, but vision was poor with old glass.

January 8, 1909. V. L. equals 20/70 S. minus .50 combined with C plus 1.75 axis 65 degrees equaled 20/30.

April 26, 1909. With old glasses V. equaled 20/50 minus. Without any glass V. equaled 20/30 and no glass seemed to improve vision. Told not to wear glasses for a time.

The character and extent of the injury to the cornea and iris without any injury to the lens is unique in ophthalmic literature.

Dr. E. V. L. Brown thought that this case might be explained on the basis of Foerster's anterior chamber-pressure theory. The fluids of the eye are non-compressible, and therefore when pressure is exerted, the root of the iris gives way, and in some cases it goes backward and in other cases it is completely everted. Before the piece of steel entered the eye the aqueous was forced back against the iris, which gave way and then came out through the opening made by the steel.

Dr. Guilford replied that this was a case where the iris was torn away completely with dislocation of the lens beneath the conjunctiva. Not a trace of the iris could be seen. The lens was removed and the eye recovered.

Dr. Harry W. Woodruff presented a companion case to Dr. Guilford's, but it was of congenital origin, in a girl, 9 years of age, who has never seen well. There is a slight trace of the iris below. The peculiar condition of the lens makes it difficult to determine whether or not it is luxated. The upper border of the lens appears to be tilted forward.

Dr. Henry Gradle inquired if Dr. Guilford studied the relationship of the ciliary processes to accommodation in this case.

Dr. Guilford replied that he had not. Dr. Brown's explanation he believed to be a good one. He has never seen a case like this before, where the iris was entirely absent without any injury to the lens. The rapid change in the refraction was interesting, going from 10/200 to 20/30 in less than eight months. That was probably due to the fact that the corneal wound had united, and the action of the lids smoothed down the irregularity until it was practically normal.

### Steel in the Lens with Unusual Features.

Dr. Guilford also presented the following case:

Robert J., aged 16, machinist helper, was seen April 28, 1909.

January 18, 1909, was working at punch press when scrap flew into left eye. Seen by company surgeon following day. No foreign body; eye slightly inflamed; cornea abraded. Gave boric and argyrol.

January 23, 1909. Dismissed cured, V. equaled 20/30.

March 19, 1909, was heating rivets when accidentally struck in left eye by tongs and hot rivet. Rivet blistered both lids of left eye, but he did not think the eyeball was injured. Under care of company surgeon burn of lids healed. For a week after accident could see well with left eye, but since then the vision had gradually failed until now can see only outline of objects as if through a fog. No pain in eye, and eye has not been inflamed.

Examination: Oblique illumination shows small pin-point scar near center of left cornea where foreign body entered eye. With pupil dilated the lens shows beginning cataract, and in anterior part of lens substance about at nasal margin of normal sized pupil can be seen a splinter of steel perhaps 2 mm. long and ½ mm. wide, imbedded in lens substance. Eye quiet.

April 29, 1909. Operation St. Luke's Hospital, under cocain. With giant magnet drew steel from lens substance into anterior chamber until resting on iris. With keratome made incision at lower limbus and with magnet extracted steel. Some prolapse of iris, which was cut off.

April 30, 1909. Corneal wound closed, anterior chamber reformed, edgs of iris coloboma free. Lens opaque. Practically no reaction from operation.

May 6th, 1909. Dismissed from hospital, wound firmly healed, eye white and quiet. Traumatic cataract.

May 12, 1909. Sent to hospital for cataract operation.

May 13, 1909. Operation. Keratome incision at lower limbus, cystotome used to tear anterior capsule. Gentle pressure followed by escape of opaque lens substance. Clear pupil.

May 14, 1909. Wound closed. No reaction from operation.

May 18, 1909. Dismissed from hospital to come to office.

May 20, 1909. Eye white and clear. S. plus 10.50 combined with plus 1.00 axis 165 equaled 20/30 minus.

May 26, 1909. Dismissed. Eye white and quiet.

Dr. Guilford believs the steel chip probably entered the eye at the time of first injury and remained quiet in lens substance, hidden from sight by the iris, until the second injury four months later hastened the slowly forming cataract.

### Dermoid Tumor of Conjunctiva.

Dr. D. Salinger exhibited a patient having a dermoid tumor of the eye. The tumor springs from the cornea and has a puckered appearance. Hair grows from its surface. The case is congenital. There is also a wart-like growth in front of the left auricle.

Dr. Willias O. Nance has observed three cases, the tumors all occurring at the sclerocorneal margin. The first case was one presented to the society several years ago. The second case was one shown to him at the Illinois Eye and Ear Infirmary by Dr. Leenheer a few weeks ago, and the third is Dr. Salinger's case. Dr. Nance had just learned that another case entered his service at the Infirmary to-day, so that he does not believe them to be as rare as one might suppose them to be.

Dr. Salinger said that this was the second case he had seen, and yet only a few cases are recorded in the literature. The tumor is always congenital and does not seem to grow, although sometimes the hairs grow to some length at puberty so that they protrude from the eye and touch the cheek. Out of 97 reported cases, Pickett found 27 complicating other malformations, such as coloboma of the eyelids, iris or chorioid, and wart-like appendages in front of the auricle, as in the present case, and absence of the auditory meatus. The treatment is total ablation.

### Lid Closure Pupillary Reflex.

Dr. C. G. Darling presented a patient 33 years old, who seven years ago contracted syphilis. Two and a half years ago sight became poor. With correction vision was 20/30 in both eyes and with plus 3 for reading he could read number one Snellen. The pupils are widely dilated; measure 8 millimeters in diameter, with no reaction to light and only the slightest reaction to accommodation. The instillation of pilocarpin brings the pupils down to one millimeter; dionin will contract the pupils to about four millimeters. The interesting feature of the case is that when the lids are held open and one tries to close them forcibly, the pupils become small. The findings in the nervous system are negative. The reflexes are normal. There are a few punctate opacities in both eyes. Irritation of the sympathetic is negative.

### A Case of Bulbous Keratitis in a Glaucomatous Eye Following Cataract Extraction.

Dr. A. T. Wanamaker presented Mrs. R. J., age 55, who consulted Dr. Casey Wood on account of failing vision in February, 1896. Examination of her eyes showed immature nuclear cataracts. In June of the same year both cataracts were extracted, but considerable soft lens material remained in right eye. In a few days plus tension and symptoms of secondary glaucoma developed in the right eye, but soon became quiet under the use of eserin.

On being refracted vision of the left eye equaled 20/50 and right eye equaled 20/20 minus. For near J. VIII. L. E.: J. I. R. E.

In 1905 vision in the right eye became cloudy and at times eye was painful, but these symptoms were closed up by using eserin ointment.

In 1906 left eye became painful and vision clouded. In 1908 Zeigler's operation for secondary cataract was performed on this eye.

January 1, 1909. Vision L. E. with glasses equaled 10/200. Vision R. E. with glasses equaled 20/20.

September 9, 1909, patient came to office and complained that two days prior left eye became red and scratchy. Examination showed a central staining area on cornea and balance of cornea steamy. There was considerable pericorneal injection. The iris tissue edematous. Patient given boric lotion and instructed to use hot applications at home.

September 20, 1909. Eye much better. Does not stain.

September 30, 1909. Patient in considerable pain; faints on examining eye. Much lacrimation and some photophobia. Ciliary injection again present. Cornea shows bulla involving lower one-third of cornea. Tension plus.

October 5, 1909. Patient says eye has felt better since she was here last until yesterday, when eye became painful again. Examination shows superficial and deep ciliary injection; cornea steamy. A bulla 7 mm. long and 4 mm. wide extends from 1 mm. of lower limbus upwards in axis 90. The lower half of the bulla is filled with transparent fluid.

The iris tissue edematous and there is what appears to be a small cyst connected with the iris and old cataract corneal scar at the limbal end of the nasal pillar of the coloboma.

Vision L. E. equals fingers at six inches: T plus.

Vision R. E. equals 5/200 or 20/20 with correction.

Fundus of right eye shows some cupping of optic nerve head, but hard to tell if more than physiological. The field of vision, however, shows a marked contraction. Diagnosis of secondary glaucoma.

Dr. J. Elliot Colburn some years ago saw a case of bullous keratitis in an eye that had attacks of glaucoma, which was, however, controlled by eserin. We tried every known means to check the condition, but finally, on account of the extreme pain, the frequency of the attacks and the wear and tear on the patient, the eye was enucleated. The lens was the seat of a hypermature cataract that had manifested itself long before the patient came under observation. There was partial detachment of the retina and some deposit in the ciliary region. The chief point in the case was the extreme frequency of the attacks of bullae, about once every four days, and the severe pain. The bullae were broken artificially or by lid pressure, only to have another appear in the same locality.

Dr. George F. Suker had one case that followed glaucoma with a syphilitic history. Most of the cases he had seen had such a basis.

Dr. Oscar Dood had an interesting case of bullous keratitis some years ago. There was a history of extraction, but no tension following. The lens was loose and would come forward into the anterior chamber through a dilated pupil. As it was the man's only eye, the lens was extracted, and a splendid result followed. About two weeks after extraction the bullous keratitis started. The man was under treatment for two or three months, and would no sooner be well than another crop of bullae appeared. Every treatment was tried without avail. Finally the opacity in the cornea became so great that he disappeared from observation.

Dr. Von der Heydt remembered an interesting case occurring in a case of interstitial keratitis. The bullae appeared every third or fourth day. There was a congenital specific history.

Dr. A. W. Mann saw two cases in colored people who gave no history of syphilis. One was a recurring case. In the other case the lesion healed entirely under quinine.

Dr. Wanamaker said that cases recorded in the literature were accompanied by marked pericorneal injection and the sensation as of a foreign body in the eye. There was no trauma or eruptive fever in his case.

### Effects of Sympathetic Inflammation on Chorioid of Second Eye.

Dr. E. V. L. Brown said that about three months ago the patient was struck in the eye by a brick. He had a wound penetrating the cornea running from the temporal side downward and inward in an axis of 45 degrees, with incarceration of the iris. The eye was removed promptly, but symptoms of inflammation were already present in the fellow eye, and continued for five months, despite mercurial inunctions, salicylates and protecting the eye from the light. About July 1 the eye was free from irritation and has remained so ever since. There may be seen now on focal illumination evidences of posterior synechiae, but superficial and deep, and in the fundus there is a generalized disturbance of the pigment epithelium in the retina, and in all four quadrants, and half way back to the disk there are small groups, widely scattered, of white flakes of atrophy of chorioid, which were described by Hirschberg and Haab as sharply circumscribed small white flakes or dots with no pigmentation, and with retinal veins running over them and with chorioidal veins in the background. Some of these spots are fan-shaped, but most of them are round, some occurring in groups or rows, but all in the same general circle in relation to the cornea.

Dr. Von der Heydt saw this case. The pupil did not dilate at all until a 2 per cent solution was used.

Dr. Clark Hawley saw a case many years ago where rather heroic treatment was attempted. Two or three drops of a 1 to 500 bichlorid solution were injected into the vitreous, with the result of saving the eye. The pain was severe, but the eye was saved.

Dr. H. B. Young said that of six cases he had seen, only one resulted in changes in the chorioid—a case of knife thrust with prolapse of the iris. He saw the patient about a week after the injury. Everything went well, and the eye got almost well. In two days there was redness in the other eye with iritic adhesions. Active alterative treatment was employed and atropin was instilled. In four or five weeks the eye was cleared up. The offending eye was enucleated when the fellow eye was quiet. Ten years later vision was still good.

Dr. Brown: The fields in this case are normal for form, and the tension is plus 3; reads Snellen 1 at 13 inches. There are 7 diopters of hyperopia, so that the vision is good. Function apparently is not impaired.

### Neuroretinitis.

Dr. Clark Hawley presented a girl, 13 years old, who about five years ago had scarlet fever, and following this there was some kidney trouble, but not serious. At present the urine is practically normal. The condition of the eyes is that of a neuroretinitis. In one eye the upper portion of the disk showed one or two small hemorrhages. The extension in the retina is not considerable; the disk is not badly swollen. Vision is about 20/70. There is a considerable error of refraction, something like a plus 4 or a 2½ cylinder, possibly due to the disease. There is no history of specific trouble or of constitutional disease. The only thing that can be suggested as a cause of the trouble is the approaching period of puberty, of which several writers have suggested.

Dr. O. Tydings said that Dr. J. B. Murphy has suggested lumbar puncture in these cases to relieve the brain symptoms, and it occurred to him that this might be a valuable treatment in cases of choked disk, such as Dr. Hawley's case seems to be.

Dr. Hawley said that the case was sent to him for diagnosis. He had nothing to do with the treatment.

### Steel in Eye.

Dr. J. E. Colburn reported the case of a man who struck a hatchet with a hammer and a particle of steel penetrated the cornea at the middle of the lower temporal angle and was projected somewhere into the back of the eye. That afternoon he examined the eye and saw what he supposed to be a foreign body, but, owing to the haziness of the vitreous and blood, could not determine what it was. The attempt to remove the foreign body with the magnet confirmed its presence. A radiograph was then made and it located the foreign body. Dr. Colburn cut down through the sclera, applied the Hirschberg magnet, and then the giant magnet and the piece of steel flew out. There was no wound of the lens, little or no reaction, no pain; the vitreous is clearing and everything is going on nicely. Vision is good.

Dr. Frank Allport advocated a few years ago scleral route of removing foreign bodies from the eye, unless they are in the extreme anterior portion of the globe and unless seen within a few hours after the accident, when the original route of entry may be used. The safest and best way of removing steel under these circumstances is by the scleral route.

Dr. Clark Hawley about sixteen years ago reported to the Society a case in which he removed the steel from the vitreous by the scleral route, and has since had one other case. In one case he introduced the magnet into the vitreous seven times without causing any disturbance. The eye is perfect and vision is 20/20.

Dr. O. Tydings indorsed the views expressed. He has removed steel by the anterior route and has never seen the slightest ill result, providing there was no infection. He has seen a piece of steel in the eye of a patient who came to be refracted. He noticed some deposits on the posterior capsule of the lens, and inquiry elicted the information that six months before the patient had received an inury, to which he paid no attention. The lens was uninjured. He returned some time afterward with a retinitis, and, remembering the spots, Dr. Tydings examined for a foreign body, but got no response even to the giant magnet. He got well, but two or three months later he had another attack. We again failed to locate the foreign body. More than two years later the steel was located with the X-ray and removed by the scleral route. The eye was removed a few days afterward, although the usual precautions were taken with reference to asepsis. His experience has been that the danger to the lens is practically *nil* if it has not been injured by the steel.

Dr. Henry Gradle fully concurred in the desirability of extracting by the scleral route in cases where you can see the steel and it is back of the equator. He can recall only a dozen cases where there was any reaction at the time, except degenerative change. The others were more or less inflamed. In none of them was there any reaction to the entrance of a well sterilized instrument into the vitreous. The old cases were left intact; the subacute cases recovered as much as it was possible to expect them to do in view of the conditions present at the time of the operation. Dr. Gradle could never attribute the slightest injury to the use of the Hirschberg tip. That danger is not so great as the danger of injuring the lens and tearing the iris by getting the foreign body into the anterior chamber by means of the giant magnet.

Dr. W. A. Mann by applying the Hirschberg tip to the giant magnet in one case obtained better control.

Dr. Colburn said that in some other cases he had seen where he removed larger pieces of steel than in this case with the magnet by the anterior route. He had occasion to regret it. In one case a semilunar piece of steel about 10 mm. long and 2½ mm. in width was brought out through the original wound, and in doing it the piece of steel made a complete turn in the eyeball, and the anterior end of it seemed to be fixed. The remote end turned clear around, and in doing so it cut through the lens, and was finally cast out through the anterior chamber.

In another case a large ragged piece of steel was brought out through the original wound, and it also, either in going in or coming out, wounded the lens. In the first case a panophthalmitis occurred almost immediately, and the eye was enucleated. In this case he was very glad that he did not succeed in bringing it out with the giant magnet through the wound entrance, because he is sure that it would have caused serious trouble.

WILLIS O. NANCE,
*Secretary.*

# COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of October 16, 1909, in Denver, Dr. Charles E. Walker, presiding.

### Penetrating Ciliary Wound.

Dr. E. T. Boyd presented a man with detached ciliary processes and extensive degenerative changes, resulting from a penetrating wound on the nasal side of the cornea in the ciliary region of the left eye, caused on August 3rd by a piece of glass. The lens was not injured. At no time had it been possible to obtain more than a faint outline of the fundus. After the hemorrhage cleared the patient was able to see large objects and could still do so, dimly. From the time the wound was sutured the patient had no pain. The wound healed kindly and the tension remained normal until October 11th, when it was found to be minus 1. A dense whitish membrane to the nasal side, just internal to the site of the wound, was probably exudate. The vision of the right or uninjured eye was 20/20, the accommodation was unimpaired, and there was no photophobia. The extensive involvement of the ciliary body and some manifest shrinkage of the globe caused Dr. Boyd to desire the opinion of the Society with regard to the proper procedure in this case.

*Discussion.*—Dr. Magruder had recently seen a penetrating wound of the sclera, iris and lens from the explosion of a water gauge, with probability of glass within the eyeball. There had been iritis at first, but the eye was now quiet, the tension normal, and V. = 20/70 with correction.

Dr. Black had observed that most eyes cut with glass did well. He thought Dr. Boyd's case showed evidence of severe traumatism, with probably large intraocular hemorrhage, but no sign of glass in the eye. He expressed a favorable prognosis as to retaining the globe, but a poor one as to sight.

Dr. Bane thought the safest plan was to remove a congested blind eye, showing inflammatory changes. Drs. Hilliard and Strickler concurred in this opinion. Dr. Patterson suggested that transillumination might show the nature of the exudate.

Dr. Stevens considered the eye a very dangerous one, undergoing degeneration and softening, and, therefore, presenting a bad outlook. He would remove the eye. Dr. Walker agreed with this opinion.

Dr. Neeper would remove the eye at once, unless he could keep it under close observation.

Dr. Jackson regarded the condition as a slow cyclitis, with ciliary exudate. X-rays would be most likely to reveal glass if present. He would remove the eye soon.

Dr. Libby considered the eye must be removed sooner or later, and so would remove it now, thus evading responsibility for possible sympathetic ophthalmitis later.

Dr. Ringle was reminded of a similar case from an exploding shell. Cyclitis developed. A foreign body was found in the globe on enucleation.

### Exudative Chorioiditis.

Dr. E. O. Sisson showed a tubercular male patient, aged 54, who had entered a sanitarium in the East, June 14, 1908, with moderately advancing pulmonary tuberculosis. After six weeks in bed the symptoms abated and the patient improved rapidly. While apparently doing well, he complained of failing vision, which grew rapidly worse. R. V. = 20/100, L. V. = 20/40. Examination showed exudative chorioiditis in the right eye; one or two white patches near the optic nerve projecting into the vitreous. He was given tuberculin ("B. E.") in doses of 1/10000 to 1/7000 mg.; at the end of six weeks vision was improved.

On July 27, 1909, Dr. Sisson examined him at a sanatorium in Denver, and found the general condition good, but vision worse. R. V. = 8/100, L. V. = 15/30. Examination of the right eye showed a slightly bluish tinge to the sclera. Details of the fundus could not then be seen because of very hazy vitreous and floating opacities, but just below the junction of the inner and lower quadrant of the disk a large whitish patch was visible. The patient had ceased taking tuberculin. Although Dr. Sisson could get no definite history of syphilis, he suspected a mixed infection and put the patient on mercurial inunctions. The condition failed to improve, and as the resistance was excellent and no active changes were taking place in the lung lesions, the use of K. I. was begun. At the end of three weeks vision had improved, the vitreous was much less hazy, and details of the fundus were clearer and the general condition good.

### Traumatic Cataract.

Dr. W. A. Sedwick presented a youth who had been injured three months before by a blow from a stick, which penetrated the cornea and lens capsule. In the first three weeks following the accident there was considerable swelling of the lens, but increase of tension was combated by spontaneous opening of the corneal wound from time to time during the period. Then the anterior chamber closed, the eye got quiet,, and absorption of the cortex proceeded satisfactorily. Anterior synechia developed at the site of the corneal wound, making the pupil somewhat irregular. When shown to the Society considerable opaque anterior capsule and a moderate amount of unabsorbed cortex were visible. Dionin powder was being dusted into the eye daily.

*Discussion.*—Dr. Libby suggested the use of dionin every second or third day, rather than daily. If absorption of the cortex was not complete in a few more months, he would do a broad discission of the anterior capsule, stirring up the cortex, and at the same time try to divide the adhesion between the iris and cornea.

Dr. Neeper had observed, in several cases of penetration of the lens by a foreign body, two in which only a slight lineal scar remained.

Dr. Stevens spoke of a similar case with no lens opacity at the end of five years.

Dr. Black said that while he had noted no opacity at first in some cases of foreign body in the lens, he had seen clouding later and eventually complete cataract.

### Analin Staining.

Dr. G. F. Libby showed a woman whose eye was stained a deep blue from the point of a "Mephisto" pencil, which flew into the eye while sharpening the "indelible pencil," three and one-half hours before. The particle had lodged between the lids and the eyeball at the external canthus and remained there one-half hour, when the patient washed it out because told that the eye was stained blue. Two hours later, when she presented herself for examination, the outer two-thirds of the ocular conjunctiva was stained a dark blue, the largest veins being blue black, and the inner third was a paler blue. There was analin-stained mucus at the seat of lodgment, but no piece of the point of the pencil. The cornea was not affected. Three irrigations of the eye with 3 per cent hydrogen peroxid that evening and two the next morning were followed by complete restoration of the natural color. Holocain, 1%, combined with 2% boric acid solution, was dropped into the eye before irrigating with H2 O 2. Rather severe conjunctivitis developed on the second day, but disappeared in the following four days; although the hydrogen peroxid in 10% solution was continued for two or three days on the patient's initiative.

### Kerato-Iritis.

Dr. Melville Black presented a man who, ten years before, had been under the care of Dr. L. Webster Fox for a kerato-iritis which lasted several months. He had no trouble since until recently. Dr. Black saw him first on September 20th. He then complained that for ten days the left eye had been inflamed and photophobic, but not painful. A well-developed serous iritis with Descemetitis was found. A questionable history of syphilis was obtained, so mercurial inunctions were ordered. About a week afterwards interstitial corneal deposits developed, gradually increasing until very numerous. They varied in their arrangement and number. At times they were like streaks of clouds, and again they were irregular small splotches or spots, and again they were irregular large dots. He had no pain except when the tension was high, and he seemed to be healthy. His treatment consisted of atropin, dionin, and the intermittent X-ray every other day. The patient said that the X-ray "made the eye feel good."

*Discussion.*—Dr. Neeper expressed a preference for mercury by injection, rather than per oram or by inunction, in inflammations of the sclera, cornea and iris. He had used the mixed treatment in kerato-iritis with spots in the substance of the cornea.

Dr. Marbourg said that smallpox had seemed to check sympathetic ophthalmitis which arose from the stump of a fellow eye which had been previously injured.

### Ectopia Lentis.

A case of bilateral dislocation of the lens was shown by Dr. Black. One eye has been unsuccessfully operated on ten years before. In the other the pupil was displaced almost to the margin of the cornea, the iris was tremulous and the vision much lessened.

### Destructive Penetrating Wound in Eye.

Dr. Black presented a man, aged 40, who was brought to him, May 6, 1909, by Dr. C. A. Ringle. Seven days before, while pounding a "hardy" on an anvil, something flew and struck him on the upper left eyelid, which bled somewhat. The next morning he found his vision blurred. The eye was not then painful, but gradually became so. When Dr. Black first saw the patient he was in constant pain. Examination showed a scar in the inner third of the left upper lid, with a corresponding scleral scar in the superior nasal quadrant of the globe, 6 mm. from the cornea. With the ophthalmoscope the foreign body could be seen in the clouded ocular media just back of the lens, corresponding to the scleral scar. A radiograph, taken by Dr. G. H. Stover, showed the presence of the foreign body in this situation. The eye was much inflamed and the iris somewhat discolored. The scleral wound was enlarged and the tip of the Hardy magnet brought to the wound, but without response. An extension tip was then introduced through the wound into the eye with negative results. After working in this way for some time without results, it was concluded that the metal was of low magnetic value. So the instruments from which the metal came were sent for and tested, and were found to be about one-third magnetic value as compared with common steel or iron. The patient was then taken to Dr. C. E. Walker's office and his Meyrowitz-Haab magnet used. After working for over half an hour with that instrument the metal was extracted. It was a chip about 3 mm. long and 1 mm. thick. Iced applications were used for several days almost continuously. The eye quieted down rapidly, but a low grade of uveitis developed. Heroic doses of sodium salicylat were given and atropin and dionin used locally. The eye finally became quiet, but vision was almost nil, and no view of the fundus was obtainable. On September 9th the eye was again inflamed and painful. The use of atropin showed extensive posterior synechiae, which could not be broken. The iris was discolored and the tension of the globe —2. He was again given heroic doses of sodium salicylat, with atropin and dionin locally. When shown before the Society the eye was quiet, but the iris was extensively attached to the lens capsule, the lens was somewhat opaque and the tension minus. Dr. Black raised the question of immmediate enucleation as against awaiting symptoms of sympathetic irritation, and asked the length of time that sympathetic irritation had been known to continue before sympathetic inflammation appeared.

*Discussion.*—Dr. Jackson thought sympathetic irritation and sympathetic inflammation were distinct diseases. He had seen sympathetic irritation causing practical blindness for several weeks, develope twelve years after ocular injury, The longest time after injury, of beginning sympathetic inflammation, in his experience, had been six years. The removal of the exciting eye was immediately followed by recovery of the eye suffering from sympathetic irritation. But from sympathetic inflammation recovery after enucleation might be incomplete or not occur at all.

Dr. Marbourg spoke of the irritation of the eye by oxidation of a retained foreign body, and said that such eyes were usually removed later on.

Dr. Boyd would remove the eye in question at this time, as it would have to come out later.

Dr. Walker thought there was no connection between sympathetic irritation, which might be very protracted, and sympathetic inflammation. In the latter condition he favored immediate removal of the exciting eye. He also spoke of the presence in the lens of three small pieces of dynamite cap, the result of a recent injury. No harm had yet been done. He raised the question of how small a foreign body could cause sympathetic ophthalmitis.

Dr. Stevens said that any foreign body shown by the X-ray will cause trouble.

Dr. Jackson stated that no piece was small enough not to be of some danger; although the larger ones were more dangerous. Copper particles were not likely to do much harm, but minute particles of iron might cause siderosis.

### Gunshot Wound of Eye.

Dr. Neeper presented the case of a healthy girl of 17, who was first seen by him September 20, 1909, after having received a gunshot wound of the left eye during the previous evening. The foreign body, supposed to have been fine birdshot, passed through the lower lid and entered the conjunctiva about 5 mm. below the lower fornix and about 1½ mm. to the left of the median line. The lid wound was probed and seemed to be about 2½ mm. in diameter. The pupil was dilated in an oval form, the long axis lying in the horizontal meridian. The interior of the eye appeared normal, except the vitreous, which was slightly turbulent, and there seemed an unusual whitish spot at the macula. The lids were greatly swollen and there was much conjunctival ecchymosis. L. V. = 20/80 and had remained practically unchanged. X-ray front view showed the foreign body to be 4 mm.x6 mm., side view 4 mm.x 4 mm., and showed the center of such body to be 13 mm. back of the center of cornea, 13½ mm. below the horizontal plane and ½ mm. to the temporal side of the vertical plane. Since the swelling had subsided the foreign body could be felt reasonably as located by the X-ray.

*Discussion.*—Dr. Black considered the prognosis good. If the eye cleared he would not interfere, but if the vitreous grew cloudy he would try to get the foreign body.

Dr. Bane thought the impact had caused the retinal and vitreous changes.

Dr. Jackson considered it better to remove the foreign body, although it was doing no harm now, and he would test for malingering, and would expect the vision to improve.

Dr. Stevens would leave the shot alone, as it was doing no harm. He recalled two cases in which no harm resulted from leaving the shot in situ, and said it was often encysted.

### Traumatic Cataract and Siderosis.

Dr. G. H. Strader stated that in a man of 32, whom he had formerly presented to the Society, he saw no improvement in the ocular conditions until he relieved maxillary and ethmoidal empyema by operation about a year later. The inflammation cleared in a few weeks and the lens absorbed. After discission, vision rose to 20/30.

George F. Libby,
*Secretary.*

# ABSTRACTS FROM THE TRANSACTIONS OF THE DUTCH OPHTHALMOLOGICAL SOCIETY, 1908.

D. A. Kuyk, M. D.

Dr. Nicolai spoke at some length on the permanent drainage of nasal duct by the method of Koster and Kan. He reported a series of fifteen cases, mostly old and obstinate, most of which had received long courses of treatment by the older methods of dilatation and cleansing, with only temporary relief. Most of the cases required the insertion of the thread only once, remaining in situ from a few days to a month or more, according to the needs of the individual case. Two required a second insertion and only one a third replacement. In five of the cases the result is brilliant and permanent; in five the result is good, and in two doubtful. The advantages of this method are: 1st, it is much more easily performed; 2nd, it is very much less painful; 3rd, the treatment is of very much shorter duration and the results more permanent, the treatment is much less expensive; 4th, there need be no time lost from work. The thread occasions no distress or trouble other than slight conjunctivitis the first day or two. While it is yet too early, perhaps, to speak definitely of the method, it is one which is much superior to the old treatment; it certainly promises to give better and more permanent results.

During the discussion of this subject it was brought out that instead of the special hollow sounds of Koster, the ordinary hollow sound of De Wecker had been successfully employed; that most of those who had tried the method had to call in a rhinologist to find the thread in the nostril underneath the inferior turbinate and to draw it out; that some of the members who had tried the method were disappointed with it because of the subsequent closure of the duct, to which Dr. Nicolai replied that even if the duct did close, if there was a relapse, it was easy to replace the thread, thus obviating the necessity for frequent and painful probing; that if the method was carefully followed results would be mostly good and satisfactory.

Dr. Piekema reported the removal of a splinter of copper from the vitreous through a scleral incision. A girl, age 13, had some days before this visit been injured by the explosion of a percussion cap. The eye is only slightly injected. In the cornea is a minute perforated wound, through which is seen a small body penetrating the iris down and inwards in the direction of the ciliary bodies. The object resembles a fine hair. This is removed through an incision in the cornea, and under the microscope is recognized as a splinter of copper detached from its main body, which is discovered in the vitreous as a small, yellowish gray object, having a metallic appearance. Suspecting this to be the body of the copper splinter, it was determined to attempt to remove it by extraction. Under cocain anesthesia a meridional incision was made through the sclerotic directly over the foreign body, it was seized with delicate iris forceps, when, after a little very careful manipulation, it was successfully removed without the loss of vitreous. The wound was stitched, as was also the conjunctiva. The wound healed by first intention. Result: One year afterwards there is absolutely no indication of injury. The field of vision is contracted, but there remains enough vision for the child to find its way about. The vision in the opposite eye remains normal. The point of importance in this case lies in that if the extraction had not been attempted, or if it had failed, the eye would have been inexorably lost; it would have been at once enucleated, to avoid the great danger existing in an eye wounded by copper from sympathetic ophthalmia. An eye injured by copper, with retention of this metal, may be considered destroyed unless immediate extraction is successful, because of the chemical composition of the metal, and because, according to Van Leber, of the great tendency to the formation of connective tissue, with subsequent contraction, around the foreign body. Dr. Schonte remarked that copper is not always destructive. The lens especially being tolerant. One case has had a copper splinter in the lens for seventeen years without the least discomfort. This tolerance depends perhaps upon the fact that in the lens there is a total absence of connective tissue and, therefore, there cannot occur a connective tissue formation.

Dr. Kinderman reported at some length a case of epilepsy —epileptoid convulsions—following an imperfect enucleation. The patient is a young man of 25. His family history is of the best. Entirely negative as to occurrence of epilepsy in any branch of it. When 14 years old, while working in a foundry, he was injured in the right eye by a piece of iron, the ball being later enucleated. Three years afterwards, while working as a clerk in the office of the foundry, he had an epileptoid seizure, falling backwards upon his head, remaining for some time unconscious. From this time the seizures increased in frequency and severity until they were of daily, and frequently many times daily, occurrence. After a time he became mentally weak, somber, morose, quarrelsome, with a suicidal mania. He has had much treatment without relief. After careful observation of the case for some time, a resection of the stump of the optic nerve was proposed and accepted. At the operation it was found that at the enucleation the optic nerve was not divided, but the sclera was buttonholed, as the remaining piece was recognized imbedded in the mass of connective tissue in which the entire optic nerve was buried. Four years have now elapsed since this operation without a recurrence of the seizure. The patient seems to be permanently cured. Much care was taken by alienists, as well as by himself, to make a correct diagnosis, and the results seem to prove the correctness of it.

Dr. Cuperus reported a case of teleangectasia of the face, complicated by glaucoma simplex. He ascribed to the pressure on the globe the occurrence of the glaucoma.

Dr. Faber reports a case of long retention of a short piece of lacrimal duct sound. Patient reported that an oculist had inserted the sound about ten years before and that he had permitted it to remain undisturbed since that time, although it gave him considerable trouble. It was removed under cocain anesthesia. He reported a case of cilia in the anterior chamber, due to traumatism. A 12-year-old boy was struck in the eye by a piece of wire, producing a hemorrhage into the anterior chamber. In a few days this cleared up, when a small wound was seen at the lower sclerocorneal margin. Examining the eye with the double loupe, he discovered a bundle of three threads extending from the wound upwards across the center of the pupil to the upper sclerocorneal angle. To the nasal side were seen more threads, or what appeared to be threads. They had the appearance of delicate wires. Seizing the end of one of these, which projected from the wound, it was found to be a cilium. Under anesthesia the others were removed. In a few days normal vision was restored. The peculiar interest in this case is that the end of the wire should have seized the cilia of the lower lid and have forced them through the eye just at the sclero-corneal margin into the anterior chamber without wounding the iris or lens.

Dr. Verwey spoke at some length upon the newer combinations of steel, which are but slightly, if at all, magnetizable.

For some time it has been known that the melting point of an alloy is widely at variance with that of its component metals, but for the oculist it is of great scientific interest to know that an alloy of iron, which is very profoundly affected by the magnet, and a very low percentum of manganese, which belongs to the paramagnetic group, is very slightly affected by the magnet. He exhibited a number of cubes of iron and steel alloys.

They were exposed to the action of a strong magnet. The magnetizability of each alloy was thus demonstrated. One of the pieces was hardly affected by magnetic attraction. The peculiar results obtained by the combination of several metals was demonstrated in 1901 by Heusler, who made an alloy composed of copper, manganese and aluminum which is only half as magnetizable as iron. In his book Heusler says: "It follows that the magnetizability does not depend upon the chemical composition of the several metals, but upon the molecular structure, which is yet unknown, of the combination." Searching the literature, he found it stated that nickel-steel is ordinarily magnetizable, but the addition of a small percentum—1%—of manganese rendered it practically unmagnetizable. As compared with steel, cromium and vanadium are less magnetizable, but tungsten-steel is more highly so. Of importance to the profession is it to know that the addition of only a small percentum of manganese to steel makes it brittle and fragile, but the addition of a larger quantity renders it hard and tough. It is very necessary for the oculist to take cognizance of these structural peculiarities, since the treatment of the wounded would depend upon the material producing it, especially if retained within the globe. Numbers of cases are reported in literature of failure of the magnet to withdraw pieces of these alloys. Hence it is of great importance to ascertain, if possible, the nature of the metal in which the patient works to treat the case successfully.

## BOOK REVIEW.

### **Sight Testing Made Easy.**

By W. Wright Hardwicke, M. D., M. R. C. P. Published by J. & A. Churchill, London; P. Blakiston's Son & Co., Philadelphia. Price, one dollar.

The author of this little book of sixty-four pages says that it was first compiled in the form of notes as aids to memory. The "present enlarged form" he intends as a companion to the larger and more comprehensive works on refraction.

The author further hopes "to enable the busy practitioner to test the sight of a patient and prescribe the necessary correcting glasses in the shortest possible space of time."

We are unalterably opposed to all phases of ingenuity which result in the making of the practice of medicine and surgery *easy*. Many doors are thus opened wide for the entrance of incompetents. The busy practitioner, by whom we presume is meant the one busily engaged in a general practice, had better, in our opinion, refrain from "sight testing," however easy it may seem after reading this little book. The book contains 152 paragraphs, many of which are clear and concise statements of fundamental facts, some are quite involved and do not seem to aid much in making the subject easy, and some are so carelessly handled as to misinform.

Of the latter we would call especial attention to paragraph 31. "The p. p. or near point in the emmetrope, at which objects can be seen by the exercise of accommodation, is 22 c. m." Some emmetropes live to be quite old and would find it difficult indeed to read at 22 c. m., while a real young emmetrope might do still better.

There are doubtless many good points to recommend this book, which is, mechanically, beautifully presented, but just what want it is destined to supply we are not prepared to say—surely not the want designed by the author.

William T. Shoemaker.

# NEWS AND NOTES.

## George C. Harlan, M. A., M. D.

We have to note with regret the death of Dr. George C. Harlan, of Philadelphia, on September 25, 1909. Thrown from his favorite mount, he sustained a fracture of his vertebral column, thus terminating his long and useful career while in the pursuit of what had for years been his daily recreation.

Dr. George C. Harlan was born in Philadelphia, January 28, 1835. His degrees in Arts and Medicine were received at the University of Pennsylvania, the latter in 1858. He was Resident Physician to the Wills Eye Hospital, St. Joseph's Hospital and the Pennsylvania Hospital.

For a short time in 1861 Dr. Harlan was Acting Assistant Surgeon, U. S. N., but preferring another service, he enlisted in the Eleventh Pennsylvania Cavalry for the full term of three years. During the war he had the misfortune which later became an honor, of being captured and detained in Libby Prison.

At the close of the war he entered upon the practice of his profession and until the day of his death maintained a keen and active interest in his work and the work of others.

At various times he has been Attending Surgeon to St. Mary's and the Children's Hospitals; Surgeon to Wills Eye Hospital; Ophthalmic and Aural Surgeon to the Children's and the Pennsylvania Hospitals; Professor of Diseases of the Eye, Philadelphia Polyclinic; Ophthalmologist and later Consulting Ophthalmologist to the Pennsylvania Institution for the Instruction of the Blind, and the Pennsylvania Institution for the Deaf and Dumb. As a Fellow of the College of Physicians of Philadelphia, he served for many years on the Library Committee, and in spite of his advancing years was seldom absent from the meetings of the College or its Section on Ophthalmology.

In the American Ophthalmological Society, which Society in 1893 honored him with the Presidency, he was also constant in his interest and attendance, and a frequent contributor either in essay or discussion.

Dr. Harlan's contributions to the literature of ophthalmology are many and broad; they are based mostly on experience gained through constant application and unusual opportunity.

Dr. Harlan's professional career is a splendid example for him who with patience, industry, kindness and modesty will live a life of usefulness and leave the world better for the role given him to play in it.

Dr. Lucien Howe of Buffalo was awarded a medal for his contribution presented before the Eleventh International Congress of Ophthalmology, which was held at Naples in April, 1909. More than five hundred ophthalmologists were in attendance from different parts of the world, and many important papers were read, among them one by Clausen of Berlin, concerning the identification of the trachoma germ.

Dr. Mary Buchanan and Dr. Josephine W. Hildrup of Philadelphia have been elected Associate Clinical Professors of Ophthalmology in the Woman's Medical College of Pennsylvania.

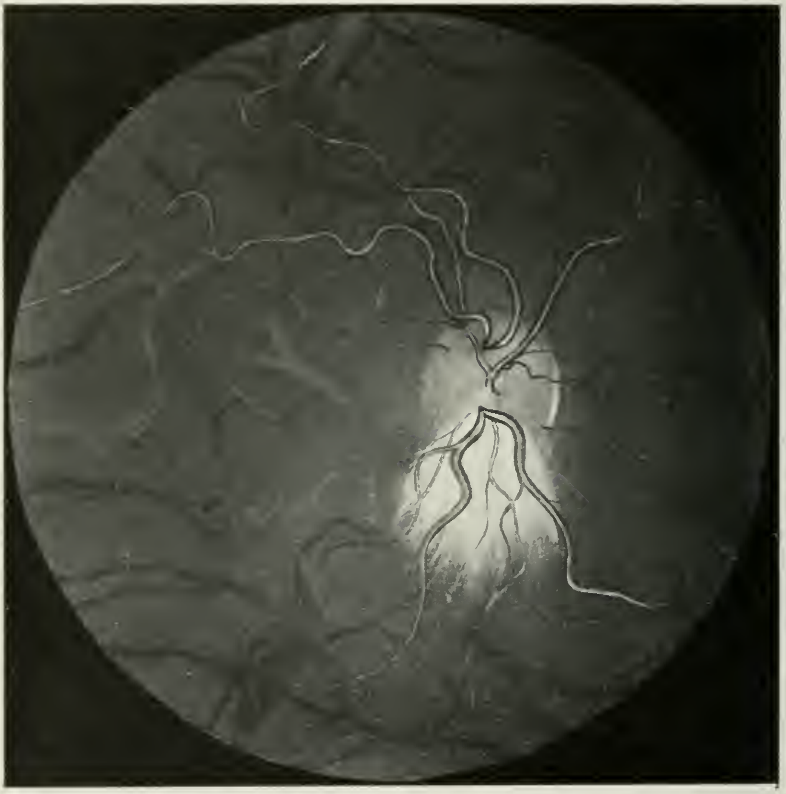
Dr. Thomas B. Holloway of Philadelphia has been appointed ophthalmologist to the Pennsylvania Institution for the Blind, and Dr. Carl Williams of Germantown has been appointed ophthalmologist to the Pennsylvania Institution for the Deaf and Dumb.

Dr. Edward A. Shumway, who for more than three years has had charge of the German abstracts for the ANNALS, has resigned from the staff, much to the regret of his colleagues.

Dr. Charles M. Hosmer removes January 1st, 1910, from Philadelphia to Colorado Springs, where he will be associated in practice with Dr. Edward R. Neeper.

Dr. William Zentmayer has assumed joint editorship of the *Ophthalmic Year Book* with Drs. Jackson and Schneidemann, in the place of Dr. de Schweinitz, who has resigned. He has also joined the editorial staff of the ANNALS, taking charge of the German Abstract Department.

Dr. James Thorington has withdrawn from the Philadelphia Polyclinic, and announces that he will give private instruction in Refraction to graduates in medicine.



RETINAL PHLEBITIS FOLLOWING INFLUENZA:

(DR. EDGAR S. THOMSON.)

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# A CLASSIFICATION OF EYE DISEASES.*

## WITH THE OUTLINE OF A UNIVERSAL MORBIDITY LIST BASED ON THE NOMENCLATURE OF DISEASES OF THE ROYAL COLLEGE OF PHYSICIANS, OF LONDON.*

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## NECESSITY OF A UNIFORM CLASSIFICATION.

From many points of view it is of great importance to have a correct and uniform arrangement, classification, and nomenclature of diseases. If the arrangement and classification are not uniform, the tables compiled by hospital statisticians and health officers cannot be compared with one another. And if the nomenclature is not uniform, so that different men use different terms to denote the same morbid condition, or the classification is not uniform, so that some include under one term conditions which by others are separately enumerated, then not only is the compilation of correct statistics made difficult or impossible, but a considerable difficulty is thrown in the way of the student of medical literature, who can never be certain that the condition which an author is describing is that which he knows under the same name.

To make a classification that shall be universally acceptable is a difficult, perhaps an insurmountable, task. A classification which is suitable for the purposes of the health officer is not usually the best for hospital returns. A health officer, for instance, finds it important to separate injuries due to accident from those inflicted with homicidal or suicidal intent. To a hospital statistician such a distinction is not only needless but confusing. Again, a classification concerned with mortality statistics is necessarily very different in scope and character from one devoted to morbidity returns. Lastly, a classification suitable for a general hospital is usually insufficient for the needs of the specialist.

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*Read before the American Ophthalmological Society, New London, Conn., July 14, 1909.

What we demand of a classification is that it shall be comprehensive—including all known morbid conditions; that it shall admit of expansion, so that additions can be made at any time without deranging it; that it shall also admit of contraction, so as to be abbreviated to any desired extent without essentially changing its character; and, finally, that it shall adhere throughout to a consistent plan.

Of a nomenclature we demand that the terms shall be such as are universally recognized, properly formed, and definite in meaning. Obsolete and, more particularly, ill-defined terms should be dropped. Indeed, any nomenclature should comprise as one of its most valuable parts an "Index Expurgatorius," showing what terms not to use.

For mortality statistics the "International Classification" is fast superseding all others. It is not, however, very suitable for morbidity statistics. For these perhaps the best system is that offered by the "Nomenclature of Diseases" prepared by the College of Physicians of London. This is a universal list comprising 1344 titles. It is arranged with great care and elaboration, and in most regards is admirably suited to its purpose. Its main defects are, first, that it is not altogether consistent in its arrangement, so that the reader is sometimes left in doubt as to how he should enter certain terms.* Again, it is not flexible, in that no provision is made for expansion. Not a single term, in fact, could be added to it without deranging the whole classification.

The present author has endeavored to frame the skeleton of a "Universal Morbidity List," which, based on the London "Nomenclature," shall be free from these defects of the latter. And he has also made, as an excerpt from this "Universal List," a classification of eye diseases, which is here subjoined. This latter will be better understood if the principles governing the formation of the "Universal List" are fully explained.

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* For example, "trichiniasis."

The author may add that both lists were formulated as part of his work in connection with the Committee on Nomenclature of the American Medical Association. The chairman of this committee, Dr. Frank P. Foster, has described the general principles of the classification in his report, and has appended to the latter as an exhibit the classification of eye diseases here given.

## GENERAL PRINCIPLES OF THE CLASSIFICATION.

In designating and classifying a morbid condition, we must specify (a) whether it is general or local; (b) its character; (c) if local, the part that it affects. In the present classification the attempt has been made to accomplish these objects in the following way:

1. All morbid conditions are divided into two great classes, general and local. In morbidity returns, a sharp distinction is always made between the two, and any process which can be regarded as general or as the local manifestation or sequel of a general state must be returned under the head of "General Diseases," not under the head of "Local Diseases." Thus, syphilitic iritis should be returned under the head of "Syphilis," not under the head of "Diseases of the Iris"; traumatic cataract under the head of "Injuries," not under "Diseases of the Lens," and coloboma of the chorioid under the head of "Congenital Anomalies," not under "Diseases of the Chorioid." This is in accord with the generally accepted principle of nosological classification, which requires that every morbid condition should be registered under its primary cause.

2. The various morbid conditions are distributed into 21 sections. Section I comprises all conditions regarded as general; Sections II to XXI, all those regarded as local. (For list of sections, see Table I, below.)

3. *The general nature* of the morbid process is denoted by a *title letter*. Thus A denotes an infectious process; F denotes a tumor, I inflammation, etc. (For list of title letters see Table II.)

4. The *special nature* of the morbid process is denoted by a *species number*, which *follows* the title letter. Thus A being the title letter for an infectious disease in general, the special infectious disease syphilis is denoted by A 380. So the special diathetic affection diabetes is denoted by C 30; chronic alcoholism by D 5; etc.

5. In the case of local diseases, the *site* of the lesion is denoted by a *title number*. Thus the title number 10 always denotes an affection of the conjunctiva; 11 an affection of the cornea, etc. (For list of title numbers, see Table I.) The title number always *precedes* the title letter, the two together showing the nature of the morbid process and where it is situated. Thus 10, H means a circulatory disorder of the conjunctiva and 10, H 2 hyperæmia of the conjunctiva; 10, I means conjunctivitis; 11, J degeneration of the cornea, etc. *The presence of the title number indicates that the condition in question is local and is to be listed under the name of the part affected.*

6. In the case of general diseases the title letter (A to G) is *not* preceded by a title number—the *absence of the latter indicating that the affection is not local, and is not to be listed as such, even if confined to a single organ.* Thus, as already noted, tuberculosis of the conjunctiva is to be listed under tuberculosis (A 450), not under 10 (Diseases of the Conjunctiva); an injury of the conjunctiva is not entered under 10, but under the general head E ("Injuries"), etc.*

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* Such titles indicating a general affection of a special part may for the sake of convenience be recapitulated under the name of the part affected, but always with the statement that they do not belong here and are to be referred to the proper portion of the general list. But if for some special reason it seems desirable to group all the diseases of the conjunctiva together, then under 10 ("Diseases of the Conjunctiva") a series of heads are made as follows:

10, A. Infectious diseases of conjunctiva.
  — 60 Diphtheria of conjunctiva.
  —450 Tuberculosis of conjunctiva, etc.
10, B. Zoöparasitic diseases of conjunctiva.
  — 10 Cysticercosis of conjunctiva.
  — 20 Ecchinococcosis of conjunctiva.
  — 25 Filariasis of conjunctiva, etc.
10, C. Diathetic affections of conjunctiva.
10, D. Toxic conditions of conjunctiva.
10, E. Injuries of conjunctiva.
10, F. Tumors of conjunctiva.
10, G. Congenital anomalies of conjunctiva.

And similar heads are made for the sclera (11), cornea (12), etc.

7. The title letters, title numbers, and species numbers serve to identify the morbid condition, indicating its nature and showing its precise place in the classification. They remain invariable* no matter how much the classification itself may, for special purposes, be expanded or contracted. Thus, in the accompanying list (Table III), which is designed to comprise only diseases of the eyes, the list numbers and letters are the same as in the Universal List. In this special list Part I corresponds to Section I of the Universal List, greatly abbreviated; Part II to Section III of the Universal List; while such few excerpts from the remaining sections of the latter as would be used in the reports of an eye hospital are grouped under Parts III and IV. Reference from one part of the list to another is made by enclosing the proper title letter and number in parenthesis. Thus (A 450) following a title means that that title is to be entered under Tuberculosis (in general list A). In the accompanying list all such parenthetic entries containing title letters A to G (without a title number) refer to Part I; all containing title numbers 10 to 23 refer to Part II; and all containing title numbers 1 to 7 and 25 to 169 refer to Part III.

The list as presented may seem to many much too elaborate and detailed. Yet for many purposes great elaboration and extreme minuteness of detail are an advantage, and in some cases they are really essential. And those who demand a more compendious classification can condense the list to any desired extent—the reference letters and numbers being retained unchanged. An example of such an abridged classification, comprising diseases of the conjunctiva and cornea, is appended.

### 10. *Diseases of the Conjunctiva.*

I. Conjunctivitis.

- 1*a*. Acute catarrhal (not exanthematous, traumatic, or toxic).
- 1*b*. Chronic catarrhal.
- 2. Purulent (non-gonorrhœal).
  - *a*. Of the newborn.
  - *b*. Of others.

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* To better effect this, and make room for additions and subdivisions, the numbering of the title numbers and species numbers in the Universal List is made non-consecutive—title numbers 7, for example, being followed by title number 10.

4. Trachoma.
5. Phlyctænular conjunctivitis.
Other forms.

L. Acquired Malformations.

1. Pterygium.
5. Symblepharon (not traumatic nor trachomatous).
Other conditions of this class.
Other affections of the conjunctiva.

### 11. *Diseases of the Cornea.*

I. Keratitis.

1*a*. Ulcer of the cornea.
1*b*. Ulcus serpens.
  Other forms of suppurative keratitis.
2*g*. Parenchymatous keratitis (not syphilitic nor tuberculous).
Other forms of non-suppurative keratitis.

L. Acquired Malformations.

1. Opacity (not due to keratitis or injury).
7. Staphyloma.
8. Keratoconus.
Other malformations.
Other diseases of the cornea.

Such a classification might be condensed still further if required.

A classification of this sort, if properly made and if generally adopted, would be of service:

(*a*) In the compilation of dispensary and hospital reports. Reports so compiled would be prepared on a uniform and definite plan and could be compared with one another, even though some of the statistics were derived from general and some from special hospitals, and some were very brief, while others were set forth in great detail.

(*b*) In making mortality* and morbidity returns to health officials and statisticians.

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* Mortality returns will in general be made according to the International Classification. Dr. W. A. Coleman has very properly suggested that, to facilitate the making of such returns, there be appended to each title in any morbidity list the corresponding number of the International Classification.

(*c*) In reporting cases in medical journals and books and in medical discussions. It is important that all physicians should use the same terms in the same sense. so that a designation used by one man to denote a morbid condition shall express to every other man just this condition and nothing else.

## TABLE I.*

### Sections and Title Numbers of the Universal List.

### I. *General Diseases.*

A. Infectious conditions (due, in general, to protozoa, bacteria, or fungi).
B. Zoöparasitic affections.
C. Diathetic diseases (disorders of nutrition or metabolism).
D. Chronic intoxications.
E. Injuries (including acute intoxications).
F. Tumors.
G. Congenital anomalies.

### II. *Diseases of the Nervous System.*

1. Diseases of the nerves.
2. " " " spinal meninges.
3. " " " spinal cord.
4. " " " meninges of the brain.
5. " " " brain.
6. Miscellaneous and unclassed nervous diseases.
7. Psychoses.

### III. *Diseases of the Eye, and Appendages.*

10. Diseases of the conjunctiva.
11. " " " cornea.
12. " " " sclera.
13. " " " iris and ciliary body.
14. " " " chorioid.

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* It will be observed that the spelling of a number of terms occurring in these tables differs from that now more or less current in this country. The orthography here given conforms to the recommendations made by the Committee on Nomenclature of the American Medical Association and is believed by them to accord most closely with the best usage.

15. Diseases of the retina.
16. “ “ “ optic nerve.
17. “ “ “ lens.
18. “ “ “ vitreous.
19. “ “ “ eyeball as a whole.
20. “ “ “ lids.
21. “ “ “ lacrymal apparatus.
22. “ “ “ eye muscles.
23. “ “ “ orbit.

### IV. *Diseases of the Ear.*

25. Diseases of the auricle and external meatus.
26. “ “ “ middle ear and mastoid cells.
27. “ “ “ internal ear and auditory nerve.

### V. *Diseases of the Nose.*

30. Diseases of the nose.
31. “ “ “ accessory sinuses.
32. “ “ “ naso-pharynx.

### VI. *Diseases of the Circulatory System.*

35. Diseases of the pericardium.
36. “ “ “ endocardium.
37. “ “ “ myocardium.
38. “ “ “ arteries.
39. “ “ “ veins.
40. “ “ “ capillaries.

### VII. *Diseases of the Respiratory System.*

45. Diseases not strictly local.
46. “ of the larynx.
47. “ “ “ trachea and bronchi.
48. “ “ “ lungs.
49. “ “ “ pleura.

### VIII. *Diseases of the Digestive System.*

55. Diseases of the lips.
56. “ “ “ mouth.
57. “ “ “ jaws.
58. “ “ “ teeth.

59. Diseases of the periosteum, gums, and alveoli.
60. " " " tongue.
61. " " " palate and fauces.
62. " " " salivary glands.
63. " " " pharynx and œsophagus.
64. " " " stomach.
65. " " " intestines.
66. " " " rectum and anus.
67. " " " pancreas.
68. " " " liver.
69. " " " gall-bladder and ducts.
70. " " " peritonæum.

### IX. *Diseases of the Lymphatic System.*

75. Diseases of the spleen.
76. " " " lymph-glands.
77. " " " lymphatic vessels.

### X. *Diseases of the Ductless Glands.*

80. Diseases of the thymus.
81. " " " thyreoid gland and parathyreoids.
82. " " " suprarenals.
83. " " " pituitary body.

### XI. *Diseases of the Urinary System.*

85. Diseases of the kidney.
86. " " " ureters.
87. " " " bladder.
88. Urinary disorders.

### XII. *Diseases of the Male Genitals.*

90. Diseases of the urethra.
91. " " " prostate.
92. " " " seminal vesicles.
93. " " " prepuce.
94. " " " penis.
95. " " " scrotum.
96. " " " spermatic cord.
97. " " " tunica vaginalis.
98. " " " testicle.

### XIII. *Diseases of the Female Genitals.*

100. Diseases of the ovary.
101. " " " fallopian tube.
102. " " " uterine ligaments and adjacent structures
103. " " " uterus.
104. " " " vagina.
105. " " " vulva.
106. Miscellaneous and unclassed symptomatic disorders.

### XIV. *Affections Connected with Pregnancy.*

110. Accidents and complications of pregnancy.
111. Ectopic gestation.

### XV. *Affections Connected with Parturition.*

115. Affections of the uterus.
116. " " " vagina.
117. " " " vulva.
118. " " " urinary bladder.
119. " " " perinæum.
120. Abnormities of placenta.
121. Other affections.

### XVI. *Affections Consequent on Parturition.*

125. Puerperal affections of uterus.
126. " " " pelvis.
127. " " " vagina.
128. " " " perinæum.
129. " " " bladder.
130. " " " rectum.
131. " " " breast.
132. " " " nervous system.
133. " " " producing general disorders (pyæmia, septichæmia).
134. Other puerperal affections.

### XVII *Diseases of the Female Breast.*

140 Diseases of the nipple and areola.
141. " " " mammary gland.

### XVIII. *Diseases of the Male Breast.*

144. Diseases of the male breast.

### XIX. *Diseases of the Organs of Locomotion.*

145. Diseases of bone.
146. " " joints.
147. " " the spine.
148. " " muscles.
149. " " fasciæ.
150. " " tendons.
151. " " sheaths of tendons.
152. " " bursæ.

### XX. *Diseases of Connective Tissue.*

160. Diseases of connective tissue.

### XXI. *Diseases of the Skin.*

165. Diseases of skin proper.
166. " " sebaceous glands.
167. " " sweat coils and ducts.
168. " " hair and hair follicles.
169. " " the nails.

## TABLE II.

**Title Letters Showing General Nature of the Morbid Process.**

### I. GENERAL DISEASES.

(To be reported under Section I of the Universal List.)

A. Infectious conditions (due, in general, to protozoa, bacteria, or fungi).
B. Zoöparasitic affections.
C. Diathetic diseases (disorders of nutrition or metabolism).
D. Chronic intoxications.
E. Injuries (including acute intoxications).
F. Tumors.
G. Congenital anomalies.

## II. Local Diseases.

(To be reported under the names of the organs affected, Nos. 1-169, Sections II-XXI of the Universal List.)

H. Circulatory disturbances.

1. Anæmia.
2. Hyperæmia.
3. Œdema.
4. Hæmorrhage.
5. Embolism and thrombosis.
6. Angeiosclerosis.
7. Disturbances of lymph circulation.
8. Other disorders of this class.

I. Inflammation (classed as catarrhal, purulent, serous, fibrinous, membranous, parenchymatous, interstitial, etc., according to the character of the parts affected).

Note.—Specific inflammations (erysipelatous, syphilitic, tuberculous, gonorrhœal, and diphtherial) are not to be listed under the local affections but under the corresponding general diseases (A).

J. Atrophy, hypertrophy, and degeneration.

The degenerations comprise:

*a*. Cloudy swelling. Syn.: Granular degeneration.
*b*. Fatty degeneration.
*c*. Calcareous degeneration.
*d*. Fibrous degeneration.
*e*. Mucous or myxoid degeneration.
*f*. Colloid degeneration.
*g*. Hyaline degeneration.
*h*. Amyloid (Waxy, Lardaceous) degeneration.
*i*. Pigmentary degeneration.
*j*. Other forms of degeneration.

K. Local death. Necrosis and mortification.

L. Mechanical lesions (acquired malformations not directly due to injury). Such are:

*a*. Absence of parts.
*b*. Dislocation or malposition.
*c*. Abnormal connection with adjacent parts (adhesion).
*d*. Abnormal separation from adjacent parts or abnormal division (laceration, rupture).

*e*. Diminution in size (especially, contraction of a hollow organ), stricture of a tube or occlusion by concretions.
*f*. Increase in size (especially, dilatation of a hollow organ).
*g*. Change in shape.
*h*. Other conditions of this sort.

M. Disorders of functions, comprising:

*a*. Excess of action (hypertony of a muscular organ, excess of secretion in a secreting part, excess of sensation in a sensory organ).
*b*. Deficiency of action (hypotony, undersecretion, hypæsthesia).
*c*. Absence of action.
*d*. Perversion of normal action.

N. Disorders unclassed or of uncertain nature.

## TABLE III.

### DISEASES OF THE EYE.

## PART I.—AFFECTIONS REGARDED AS GENERAL.*

### A.† Infectious Diseases.

10. Aspergillosis.
25. Cerebrospinal fever.
30. Chancroid.
60. Diphtheria.
    Diphtherial conjunctivitis.
    Diphtherial paralysis.
85. Erysipelas.
140. Gonorrhœa.
    Gonorrhœal conjunctivitis of newborn.
    Gonorrhœal conjunctivitis of others.
    Gonorrhœal iritis.

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* In all cases specify part affected; thus, "Aspergillosis of cornea," "Sarcoma of chorioid," etc.

† The letters and numbers attached to the titles are those of the Universal Morbidity List, of which the present list is an excerpt. Part I corresponds to Section I of the Universal List.

160. Influenza.
    Influenzal paralysis.
185. Lepra.
200. Malaria.
205. Measles.
    Conjunctivitis of measles.
310. Rheumatism.
    Rheumatic iritis.
360. Smallpox.
    Variolous conjunctivitis and keratitis.
380. Syphilis.
    Chancre of conjunctiva and lids.
    Gumma of lids.
    Syphilitic keratitis.
    Syphilitic iritis.
    Syphilitic chorioiditis and retinitis.
    Syphilitic optic neuritis.
    Syphilitic disease of orbit.
    Syphilitic paralyses.
450. Tuberculosis (including Lupus).
    Of conjunctiva.
    Of cornea.
    Of chorioid.
    Of other parts or other organs
Other diseases of this class (specify kind).

### B. ZOÖPARASITIC AFFECTIONS.

10. Cysticercosis.
20. Ecchinococcosis.
25. Filariasis.
40. Phtheiriasis.
Other diseases of this class.

### C. DIATHETIC DISEASES.

3. Acromegaly.
30. Diabetes.
    Diabetic cataract.
    Diabetic retinitis.
50. Gout.
70. Leuchæmia
Other diseases of this class.

### D. CHRONIC INTOXICATION. CHRONIC POISONING BY:

5. Alcohol.
    - Alcoholic amblyopia.
    - Alcoholic paralyses.

70. Lead.
80. Mercury.
88. Naphthaline.
120. Silver.
    - Argyrosis of the conjunctiva.

130. Tobacco.
    - Nicotine amblyopia.

Other diseases of this class.

### E. INJURIES.*

Wounds† of

502. Lid.
    - *a.* Uncomplicated.
    - *b.* Complicated by symblepharon, etc.

503. Conjunctiva.
504. Cornea.
    - *a.* Non-perforating.
        - Special form: Recurrent traumatic erosion.
    - *b.* Perforating.
        - If complicated by prolapse of iris, iridodialysis, iritis, dislocation of lens, cataract, panophthalmitis, specify complication.

506. Sclera.
    - *a.* Non-perforating.
    - *b.* Perforating.
        - If complicated by ciliary prolapse, escape of vitreous, dislocation of lens, detachment of retina, panophthalmitis, specify complication.

508. Orbit.
    - Specify if complicated with injury to optic nerve or the muscles.

510. Lacrymal apparatus.

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* To replace Nos. 1110-1122 of the London List and include various additional titles given on pages 43-49 of the latter.

† Including wounds produced by operation.

Gunshot wounds of

515. Eyeball.
517. Orbit.
    Specify if complicated with injury to optic nerve or the muscles.

Fractures of

525. Bones of orbit.
    Specify complications (injury to optic nerve, etc.).

Contusion and concussion of

530. Lids.
532. Globe.
    With rupture of cornea.
    " " " sclera.
    " keratitis profunda.
    " iridodialysis.
    " iridoplegia and cycloplegia.
    " dislocation of lens.
    " traumatic cataract.
    " rupture of the chorioid.
    " concussion of the retina.
    " detachment of the retina.
    " laceration of optic nerve.
    " dislocation of eyeball.

Foreign bodies of

550. Conjunctiva and cornea.
552. In eyeball.
554. In orbit.

Effects of heat and light.

558. Burns of conjunctiva, lids, or cornea from heat or caustics.
    Uncomplicated.
    Complicated (with symblepharon, pseudopterygium, ectropion, entropion). (Specify complications.)
562. Solar conjunctivitis (snow blindness).
563. Electric conjunctivitis.
565. Solar (and electric) retinitis.
567. Cataract from heat.
570. *x*-ray burns of eye.

Acute poisoning.*

- 575. Poisoning by corrosive substances.
- 585. Poisoning by substances ingested, inhaled, or absorbed, causing
  - Conjunctivitis.
  - Mydriasis (and cycloplegia).
  - Meiosis.
  - Cataract.
  - Amblyopia.
    - Quinine amblyopia.
    - Methyl-alcohol poisoning.

## F. TUMORS.

### 1. *Malignant Tumors.*

Carcinoma of

- Conjunctiva.
- Cornea.
- Chorioid.

Epithelioma of

- Conjunctiva.
- Lid.

Sarcoma of

- Conjunctiva.
- Iris and ciliary body.
- Chorioid.
- Optic nerve.
- Orbit.

Glioma of

- Retina.

### 2. *Benign Tumors.*

Fibroma of

- Optic nerve.
- Lid.

Lipoma of

- Conjunctiva.

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* Specify poison.

Melanoma of

- Iris.

Angeioma of

- Lid.
- Orbit.

Cyst of

- Iris.

Other tumors.

## G. Congenital Anomalies.*

Tumors.

- Lipoma.
- Telangeiectasis (of orbit or lids).
- Cyst (of conjunctiva, iris, or lids).
- Dermoid (of conjunctiva or orbit).

Anomalies of cornea.

- Opacity.
- Pigmentation.
- Microcornea.
- Megalocornea.

Anomalies of sclera.

- Scleral fissure (Protrusion of Ammon).

Anomalies of iris.

- Persistent pupillary membrane.
- Coloboma.
- Aniridia.
- Ectopia pupillæ.
- Polycoria.

Anomalies of chorioid.

- Coloboma.

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* To replace London List of malformations so far as it relates to the eye, with other titles passim on pp. 51 et seq. of that list.

Anomalies of retina and optic nerve.

- Coloboma.
- Absence of vessels or peculiarities in arrangement.
- Medullated nerve fibres.
- Fibrous tissue on the papilla.
- Pigmentation of papilla.
- Amblyopia (congenital).
- Color blindness.

Anomalies of lens.

- Cataract.
- Coloboma.
- Dislocation (Ectopia lentis).
- Lenticonus.

Anomalies of vitreous.

- Persistent hyaloid artery.

Anomalies of eyeball.

- Buphthalmus.
- Microphthalmus.
- Anophthalmus.
- Cyclopia.
- Albinism.

Anomalies of lids.

- Epicanthus.
- Ankyloblepharon.
- Cryptophthalmus.
- Coloboma.
- Microblepharia.
- Ablepharia.

Anomalies of lacrymal organs.

- Supernumerary puncta.
- Malposition of puncta.
- Fistula.

Anomalies of muscles.

- Congenital absence or paralysis.
  - Var.: Blepharoptosis.*

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* Do not use term Ptosis.

## PART II.—LOCAL DISEASES OF THE EYE

### 10†. Diseases of the Conjunctiva.‡

*H. Circulatory Disorders.*

2. Hyperæmia.
3. Œdema.§
   Var.: Chemosis.
4. Hæmorrhage.§
7. Lymphangeiectasis.

*I. Conjunctivitis.*‖

1. Catarrhal.
   *a.* Acute.
      Do not include: Exanthematous conjunctivitis (due to measles, smallpox, etc.) (A 205, A 360); traumatic conjunctivitis (conjunctivitis from wounds, foreign bodies, irritants, light, electricity, and x-rays, (E passim); toxic conjunctivitis (E 585); nor conjunctivitis from hay-fever (enter under Part III, 45).
   *b.* Chronic.
      Var.: Angular conjunctivitis.
      Do not include: Lacrymal conjunctivitis (21, I).
   *c.* Follicular.
2. Purulent.**
   *a.* Of the newborn.
      If gonorrhœal enter under A 140.
   *b.* Of older persons.
      If gonorrhœal enter under A 140.
3. Membranous.
      If diphtherial enter under A 60; if due to chemical irritants under E 575.

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† The numbers 10, etc., prefixed to the titles correspond to the numbers of the Universal Morbidity List, of which this list is an excerpt.

‡ For the general diseases affecting the conjunctiva, see Part I.

§ Entry to be made under this head only when no cause for the condition is known. Otherwise enter under the cause (E; 10, I, etc.).

‖ Give cause (microörganism, occupation, etc.) when known; also state whether epidemic or not. Note presence of serious complications (ulcer of cornea, pannus, xerophthalmus, trichiasis, ectropion, entropion, or symblepharon).

** Note presence or absence of discharge from genitals.

4. Trachoma.
   Do not use terms "Granular conjunctivitis, Egyptian ophthalmia, granular lids."
5. Phlyctænular conjunctivitis.
6. Spring catarrh.
7. Parinaud's conjunctivitis.

Other forms.

*J. Atrophy, Hypertrophy, and Degeneration.*

1. Amyloid degeneration.
2. Hyaline degeneration.
3. Conjunctivitis petrificans.
4. Xerosis.*
5. Pigmentation.
   Do not include Argyrosis (enter under D 120).

*L. Acquired Malformations.*

1. Pterygium.
2. Pseudopterygium.*
3. Symblepharon.*
4. Lithiasis.

*N. Conditions, Miscellaneous or Unclassed.*

Affections of conjunctiva due to skin diseases. (See Part III, 165, 166).

## II. Diseases of the Cornea.

*H. Circulatory Disorders.*

3. Œdema.†
4. Blood staining (Hæmocornea).

*I. Keratitis.*

1. Suppurative keratitis.
   *a.* Ulcer of cornea.
   Special forms:
   (1) Mooren's ulcer (Keratitis suffodiens). (Do not use term Rodent ulcer.)
   (2) Superficial marginal keratitis.

---

* When cause is known make entry under this cause (E, 10, I, 4), specifying also the local condition.

† Enter under this only when cause of condition (glaucoma, etc.) is unknown; otherwise, enter under this cause.

Special types to be entered under other headings:
- Phlyctænular keratitis (10, I 5).
- Fascicular keratitis (10, I 5).
- Catarrhal ulcer (10, I 1).
- Gonorrhœal ulcer (A 140).
- Diphtherial ulcer (A 60).
- Traumatic ulcer (E).
- Ulcer of herpes febrilis (see Part III, 165).
- Ulcer of zoster ophthalmicus (see Part III, 165).
- Ulcer of rosacea (see Part III, 166).

*b.* Deep purulent keratitis.
- (1) Ulcus serpens. Include the varieties known as hypopyon keratitis, reaper's keratitis, etc.
- (2) Disciform keratitis.
- (3) Annular abscess of the cornea.

Note: Enter Keratomycosis aspergillina under Aspergillosis (A 10).

*c.* Keratomalacia.

*d.* Keratitis e lagophthalmo.

When due to injury enter under E; when due to paralysis of facial nerve enter under Diseases of Nervous System (Part III).

Note: Enter Neuroparalytic keratitis under Diseases of the Nervous System (Part III).

2. Non-suppurative keratitis.

*a.* Pannus.*

*b.* Vesicular keratitis.
- (1) Dendritic keratitis.
  If due to malaria enter under A 200.
- (2) Stellate keratitis.
- (3) Recurrent erosion of the cornea (if due to injury, enter under E 504).
- (4) Bullous keratitis.

Varieties to be entered under other heads:
- Herpes febrilis corneæ (Part III, Skin Diseases).
- Zoster of cornea (Part III, Skin Diseases).

*c.* Superficial punctate keratitis.

*d.* Filamentary keratitis.

---

* Enter under cause (trachoma, etc.) when known.

- *e.* Nodular keratitis. Syn.: Nodular opacity of cornea.
- *f.* Reticulate keratitis. Syn.: Lattice-shaped opacity of cornea.
- *g.* Parenchymatous keratitis Syn.: Interstitial keratitis.
  If due to syphilis enter under A 380; if due to tuberculosis under A 450.
- *h.* Keratitis profunda.
  If due to injury enter under E 532.
- *i.* Posterior keratitis (due to lesion of Descemet's membrane).
- *j.* Sclerosing keratitis.

*J. Degeneration.*

1. Zonular opacity.
   Syn.: Ribbon-shaped keratitis.
   Enter under cause (glaucoma, etc.) if known.

*H. Necrosis.*

*L. Acquired Malformations.*

1. Opacity.*
2. Microcornea.*
3. Flattening.*
4. Collapse.*
5. Wrinkling.*
   Var.: Wrinkling of Descemet's membrane (Striped keratitis, Traumatic striate opacity).
6. Keratectasia.*
   Var.: Keratocele.
7. Fistula of the cornea.*
8 Staphyloma of the cornea.*
9. Keratoconus.
   Enter Keratoglobus under glaucoma (19, H 7).

### 12. DISEASES OF THE SCLERA.

*I. Scleritis.*

1. Episcleritis.
   Var.: Episcleritis periodica fugax.
2. Deep scleritis.

---

* Enter under cause, as ulcer of cornea (11, I), injury (E), etc., if known, mentioning also the local condition.

*L. Acquired Malformations.*
- 1. Staphyloma.

## 13. DISEASES OF THE IRIS AND CILIARY BODY.

*H. Circulatory Disorders.*
- 2. Hyperæmia.*
- 4. Hæmorrhage.*

*I. Iritis (including Cyclitis and Irido-Cyclitis).*
- 1. Acute.
  If due to syphilis, gonorrhœa, rheumatism, tuberculosis, enter under A; if due to diabetes, etc., enter under C; if due to traumatism enter under E.
- 2. Chronic.
  - *a.* Simple cyclitis.
    Syn.: Serous iritis (Do not use this term).
  - *b.* Anterior uveitis.
- 3. Secondary (due to other diseases of the eye affected).
- 4. Sympathetic irido-cyclitis.

*J. Degeneration.*
- 1. Atrophy.
  Enter under cause (iritis, glaucoma, etc.) when known.

*L. Acquired Malformations.*
- 1. Synechia.
  - *a.* Anterior.
    Enter under cause (keratitis, etc.) when known.
  - *b.* Posterior.
    Enter under cause (iritis, etc.) when known.
- 2. Mydriasis.†
- 3. Meiosis.†
- 4. Heterochromia iridis.

*M. Functional Disorders.*
- *a.* Of iris.
  Paralysis (Paralytic mydriasis and meiosis) and Spasm (Spastic mydriasis and meiosis), see 13. L.

---

* Enter under cause (E: 13, I) when known.

† If due to general disease, as syphilis, etc., enter under A; if due to traumatism under E; if due to acute poisoning under E 385; if due to iritis, under 13. I; to disease of the nervous system under such disease (see Part III).

*b.* Of ciliary muscle.
Paralysis (Cycloplegia) and Spasm (Spasm of accommodation). Enter all cases under head of cause as provided in note to 13, L.

### 14. Diseases of the Chorioid.

*H. Circulatory Disorders.*
Hæmorrhage.*

*I. Chorioiditis.*
1. Non-suppurative.
If due to syphilis, tuberculosis, etc., enter under A; if traumatic under E.
2. Suppurative.
Var.: Metastatic.
If traumatic enter under E.

*J. Degeneration and Atrophy.*
*a.* Myopic.
*b.* Senile.
*c.* Colloid. Enter atrophy due to chorioiditis under 14, I.

*L. Acquired Malformations.*
Detachment.*

### 15. Diseases of the Retina.

*H. Circulatory Disorders.*†
1. Anæmia.
2. Hyperæmia.
3. Œdema.
4. Hæmorrhage.
5 Embolism and Thrombosis of retinal vessels.
6. Angeiosclerosis.

*I. Retinitis.*
If due to syphilis, malaria, tuberculosis, etc., enter under A; if due to diabetes, leuchæmia, etc., under C; if due to traumatism including effects of sunlight or electric

---

* Enter under casual condition when known.

† Make entry under casual condition (injury, retinitis, etc.) when known, specifying also the local condition.

light (Retinitis solaris. Retinitis electrica) enter under E 565; if due to nephritis (Nephritic retinitis) enter under nephritis (Part III. 85, I).

*J. Degeneration.*

1. Retinitis pigmentosa.
   Note: Forms of degeneration secondary to retinitis should be entered according to the cause as noted in 15, I.

*L. Acquired Malformations.*

1. Detachment.
   If traumatic enter under E.

### 16. DISEASES OF THE OPTIC NERVE.

*H. Circulatory Disorders.**

1. Anæmia.
2. Hyperæmia.

*I. Optic Neuritis.*

1. Papillitis.
   If due to syphilis, etc., enter under A; if to brain tumor enter under F; if due to other forms of brain disease enter under Diseases of Nervous System (see Part III).
2. Retrobulbar neuritis.
   If due to chronic poisoning enter under D.

*J. Degeneration and Atrophy.*

1. Atrophy.
   If due to retinitis enter under 15, I; if due to optic neuritis under 16, I; if toxic under D; if due to nervous disease under latter (see Part III).
2. Colloid degeneration.

### 17. DISEASES OF THE LENS.

*J. Cataract.*

If due to diabetes enter under C 30; if due to toxic conditions under D; if due to traumatism under E; if congenital under G; if due to keratitis or other disease of the eye under causal lesion.

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*Enter under cause when known.

*L. Acquired Malformations.*

- *a.* Aphakia.†
- *b.* Dislocation.†
  For Lenticonus see G.

### 18. Diseases of the Vitreous.

*H. Circulatory Disorders.*

- 4. Hæmorrhage.‡

*I. Hyalitis.*‡

*L. Opacity.*‡

Var.: Synchysis scintillans.

### 19. Affections of the Eyeball.

*H. Circulatory Disturbances.*

- 4. Intraocular hæmorrhage.†
  Var.: Expulsive hæmorrhage.
- 7. Glaucoma.
  - *a.* Primary.
    - (1) Acute congestive.
    - (2) Chronic congestive.
    - (3) Glaucoma simplex.
    - (4) Hydrophthalmus (Buphthalmus‡).
  - *b.* Secondary.
    Enter under affection causing glaucoma.

*I. Panophthalmitis.*§

*J. Atrophy and Degeneration.*

- *a.* Atrophy of eyeball.‖
- *b.* Phthisis bulbi.‖

---

† Enter under E if traumtaic, under G if congenital.

‡ Enter under cause when known.

† Enter under the cause if known; if confined to vitreous enter under 18, H.

‡ If congenital enter under G.

§ Enter under cause, as cerebrospinal fever (A 25), traumatism (E), irido-cyclitis (13, I), when known; the local lesion being also specified.

‖ Make no entry under these heads unless the cause of the condition is unknown.

*M. Functional Disorders.*

1. Anæsthesia of eyeball.[‖]
2. Hyperæsthesia and neuralgia of eyeball.[‖]
3. Asthenopia.[‖]
5. Sympathetic irritation.
10. Perverted visual sensations.[‖]
    - *a.* Micropsia.
    - *b.* Macropsia.
    - *c.* Metamorphopsia.
    - *d.* Photopsia.
    - *e.* Chromatopsia.
    - *f.* Acquired color blindness.
12. Muscæ volitantes.[‖]
15. Diplopia.[‖]
    - *a.* Binocular.
    - *b.* Uniocular.
20. Ametropia.[*]
    - *a.* Myopia (simple).
    - *b.* Hyperopia (simple).
    - *c.* Astigmatism.
    - *d.* Anisometropia.
    - *e.* Presbyopia.[†]

## 20. Diseases of the Lids.

*H. Circulatory Disturbances.*

3. Œdema.

   If traumatic enter under E; if renal enter under Nephritis (see Part III, 85); if angeioneurotic enter under Skin Diseases (Part III, 165).

4. Hæmorrhage.

   Enter under cause when known (E, etc.).

*I. Inflammation.*

1. Blepharitis.
    - *a.* Simplex.
    - *b.* Ulcerosa.

---

[‖] Make no entry under these heads unless the cause of the condition is unknown.

[*] Ametropia due to organic disease of the cornea or lens should be entered under this cause.

[†] Enter premature presbyopia under paralysis of accommodation. See 13, M.

2. Hordeolus.
3. Abscess.
4. Tarsitis.
   If due to syphilis, etc., enter under A.
5. Chalazion.

## *L. Acquired Malformations.*

1. Emphysema.
   When due to injury enter under E.
2. Trichiasis.
   Enter under cause when known.
3. Entropion.
   If spastic (due to blepharospasm) enter under Diseases of the Nervous System (Part III). If due to trachoma, injury, etc., enter under causal condition (10, I; E).
4. Ectropion.
   If spastic (due to blepharospasm) or paralytic (from lagophthalmus) enter under Diseases of the Nervous System (Part III). If due to trachoma, injury, etc., enter under causal condition (10, I; E).
5. Ankyloblepharon.
   Enter under cause when known (E, etc.).
6. Blepharophimosis.
   Enter under E if traumatic.
7. Lagophthalmus.
   When due to injury enter under E; when due to 7th nerve paralysis enter under Diseases of the Nervous System (Part III).
8. Blepharoptosis.
   When due to 3d nerve paralysis enter under Diseases of the Nervous System (Part III).
   Note: Do not use term Ptosis.
9. Blepharochalasis.

## *M. Functional Disorders.*

Blepharospasm.
   Enter under Diseases of the Nervous System (Part III).

## 21. DISEASES OF THE LACRYMAL APPARATUS.

*I. Inflammation.*

1. Dacryoadenitis.
2. Dacryocystitis.
   - *a.* Acute.
   - *b.* Chronic.

*L. Acquired Malformations.*

1. Distension of excretory ducts.
2. Fistula of excretory ducts.
3. Eversion of puncta.*
4. Stricture of puncta or canaliculi.*
5. Obstruction of duct.*
6. Fistula of sac.*
7. Dacryolithiasis.

*M. Functional Disorders.*

1. Epiphora.
   Make no entry under this unless cause is unknown.

## 22. DISEASES OF THE OCULAR MUSCLES.

*I. Myositis.*

*M. Functional Disorders.*

1. Heterophoria.
   - *a.* Esophoria.
   - *b.* Exophoria.
   - *c.* Hyperphoria.
   - *d.* Mixed or unspecified conditions.
2. Strabismus.
   - *a.* Esotropia.
   - *b.* Exotropia.
   - *c.* Hypertropia and hypotropia.
   - *d.* Mixed and unspecified conditions.
     Enter paralysis and spasm of the muscles (Paralytic and Spastic Strabismus), Nystagmus, and Conjugate Deviation under Diseases of the Nervous System (Part III).

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* Enter under causal condition when known.

## 23. DISEASES OF THE ORBIT.

*H. Circulatory Disorders.*

4. Hæmorrhage.
   Enter under cause if known (E, etc.).

*I. Inflammation.*

1. Cellulitis.
   Enter under cause if known.
2. Periostitis.
   If due to syphilis enter under A, 380; if due to traumatism under E.

*K. Necrosis.*

1. Caries of bone.
2. Necrosis of bone.

*L. Acquired Malformations.*

1. Exophthalmus.*
   Var.: Pulsatile.

---

* Enter Exophthalmic Goitre under Diseases of the Ductless Glands (Part III, 84); exophthalmus due to tumors under F.; exophthalmus due to disease of accessory sinuses under Affections of Nose (Part III, 84); exophthalmus due to orbital cellulitis under 23. 31, I.

## PART III.—AFFECTIONS OF OTHER ORGANS CAUSING DISEASE OF THE EYE.*

Note: Enter affections due to syphilis, cerebrospinal fever, tuberculosis, etc., under A; those due to diabetes, etc., under C; those due to chronic alcoholism, etc., under D; those due to traumatism under E; those due to tumors under F; those due to congenital anomalies under G. Otherwise enter under the name of the causal disease, as follows:

### AFFECTIONS OF THE NERVOUS SYSTEM.

1.† *Diseases of the Nerves.*
  I. Neuritis.

3. *Diseases of the Cord.*
  J. Tabes.
    Hereditary ataxia.
    Other diseases of this class.

4. *Diseases of the Meninges.*
  H. Meningeal hæmorrhage.
    Thrombosis of the cranial sinuses.

5. *Diseases of the Brain.*
  H. Hæmorrhage.
  I. Abscess.
    Softening.
  J. Multiple sclerosis.
  L. Hydrocephalus.
  Other diseases of this class.

6. *Miscellaneous and Unclassified Diseases.*
  Hysteria.
  Neurasthenia.
  Migraine.
  Other diseases of this class.

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* Parts III and IV represent simply a few excerpts from the Universal List, grouped together in a form convenient for those tabulating the statistics of eye hospitals. In other hospitals, in tabulating general statistics, and in making morbidity returns of all sorts, the Universal List would be used.

† The numbers prefixed to the heads correspond to the numbers of the Universal Morbidity List. See Table I.

*7. Psychoses.*

General paresis.
Other psychoses.

In each case also the local condition produced should be specified* according to the following list:

- Optic neuritis (of brain disease).
- Optic-nerve atrophy (of brain and cord disease).
- Hysterical disturbances of vision.
- Neurasthenic disturbances of vision.
- Scintillating scotoma.
- Anæsthesia of eyeball and lid from fifth nerve paralysis.
- Neuroparalytic keratitis.
- Paralysis of exterior muscles of the eye.
  - *a.* Oculomotor paralysis, complete or partial.
    - Var.: Blepharoptosis†
  - *b.* Trochlear paralysis.
  - *c.* Abducens paralysis.
  - *d.* Combined paralysis.
  - *e.* Facial paralysis (Paralytic Lagophthalmus).
    - Keratitis e lagophthalmo.
- Paralysis of interior muscles (Ophthalmoplegia interior).
  - *a.* Iridoplegia (Paralytic mydriasis and meiosis).
    - Var.: Reflex iridoplegia.
  - *b.* Cycloplegia (Paralysis of accommodation).
  - *c.* Combined iridoplegia and cycloplegia.
- Paralysis of ocular sympathetic.
- Spasm of exterior muscles of eye.
- Blepharospasm.
- Spasm of interior muscles.
  - *a.* Spastic mydriasis and meiosis.
  - *b.* Spasm of accommodation.
- Disorders of associated movements.
  - *a.* Conjugate deviation of the eyes.
  - *b.* Paralysis of convergence.
  - *c.* Spasm of convergence.
  - *d.* Nystagmus.
  - *e.* Other diseases of this class.

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* I. e., an entry would read thus: "Tabes; Ophthalmoplegia interior and Optic-nerve atrophy."

† The term Ptosis should be discarded as ambiguous.

### Affections of the Nose.

31. *Diseases of the Accessory Sinuses of the Nose.*
    1. Sinuitis.
    Other conditions.
    Specify also the resulting eye lesion, viz.,
        Orbital cellulitis.
        Optic neuritis.
        Optic-nerve atrophy.
        Exophthalmus.

### Affections of the Respiratory Tract.

45. *Affections not Strictly Local.*
    Hay-fever (causing conjunctivitis).

### Affections of the Ductless Glands.

81. *Diseases of the Thyreoid Gland.*
    Exophthalmic goitre.

85. *Diseases of the Kidney.*
    1. Nephritis; causing:
        Nephritic retinitis.
        Nephritic œdema of the lid.
        Uræmic amaurosis.

### Affections of the Skin.

165. *Diseases of the Skin Proper.*
    Eczema of lids.
    Urticaria œdematosa of lids (Angeioneurotic œdema).
    Herpes febrilis of cornea.
    Zoster of lids and cornea (Zoster ophthalmicus).
    Pemphigus of conjunctiva.
    Other diseases of this class.

166. *Diseases of the Sebaceous Glands.*
    Rosacea of conjunctiva and cornea.

## PART IV.—DISEASES OF OTHER ORGANS UNRELATED TO EYE DISEASES.*

*49 East 30th Street.*

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* Enter according to title numbers as given in list in Table I. See Note* to Part III.

# REPORT OF A CASE OF GONORRHEAL IRITIS SUCCESSFULLY TREATED BY GONOCOCCUS VACCINES.*

Edward Adams Shumway, M. D.,

Philadelphia.

The number of reported cases of gonorrheal iritis treated by the injection of gonorrheal serum or vaccines is still comparatively limited, and in view of the unsuccessful results which were reported by Dr. Posey[1] before this Section, in February, 1909, the following case will be of interest to the members:

J. A., a colored man, twenty years of age, was admitted to the eye ward of the Philadelphia General Hospital, on December 12, 1909. The history obtained by our resident physician, Dr. J. J. Rutberg, to whom I am indebted for the notes, is as follows: One year ago he had a gonorrheal urethritis, which was treated by internal medication, without local treatment. The urethral discharge lasted about four weeks. Three months before admission, after having done some very heavy work, he was suddenly seized with pain in the lower part of his spine, and two hours later he noticed that the urethral discharge had returned. The following day the right knee became very painful and swollen, and later the wrist and metacarpophalangeal joints became involved, so that he was unable to walk about or use his hands.

For several weeks he received internal medication at home, and then was admitted to the venereal wards of the Philadelphia General Hospital, as he was gradually growing worse. Here he received Lafayette Mixture thrice daily, and urethral irrigations with potassium permanganate once daily. On the fourth day after admission he was given a hypodermic injection of Neisser Bacterin, containing 100,000,000 killed gonococci, and during the course of a month four other similar injections. At the end of the second injection he was free from any pain. and the swelling had been reduced in all the joints. The injections were given at irregular intervals, as the supply was limited, and it was administered only when the symptoms became aggravated. After a month's treatment the right eye became inflamed, and the patient was transferred to the eye ward. Examination showed an iritis of moderate intensity; there were well marked ciliary injection and tenderness, with neuralgic pains and photophobia. The iris showed no nodules, but the pupil was contracted, and firmly bound down by a plastic exudate, which filled in the pupil space. A diagnosis of gonorrheal iritis was made, and as it was impossible to obtain any supply of the vaccine, he was ordered atropin, dionin and hot compresses three times daily. At the end of nine days the condition was unaltered, except that the aqueous was less cloudy. The pupil remained contracted, pain persisted, and the joints of the hands were swollen and tender. A fresh supply of vaccine was then secured, and an injection of a dose of 100 million organisms was administered. The following day the pain and photophobia had greatly diminished, and the swollen joints were less tender. Three days later a similar injection was given, and on the following day his subjective symptoms had entirely disappeared, the iris had resumed its normal appearance, and the circumcorneal injection was gone. The pupil, however, remained undilated. A third injection was given, after an interval of four days, so that he received in the three injections 300 million organisms. No subsequent symptoms appeared, and at the end of three weeks he was discharged: the eye was quiet, and the joints, while not painful or swollen, were somewhat stiff.

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* Read before the Section on Ophthalmology, College of Physicians of Philadelphia, Jan. 20, 1910.

The effect of the treatment was thus very striking, and no untoward results appeared at any time from the injections. There did not appear to be any primary exacerbation of the local conditions, or general reaction, as have been reported elsewhere, and no abscess occurred at the site of inoculation.

The development of the treatment of various bacterial diseases by the use of sera or vaccines obtained from the organisms in question has been one of the notable advances in medicine during the past decade, and the literature on the subject has grown to formidable proportions. In no infection have the results obtained been more at variance than in that produced by the gonococcus. This is probably due, in part, to the confusion as to whether the serum or vaccine was used, and partly to the unreliability of some of the preparations employed. The results have been well summarized by Richardson[2], in a paper in the *American Journal of the Medical Sciences*, for October, 1908, in which he says:

"The treatment of the common infections of the urethra and conjunctiva by specific sera and vaccines has not, thus far, met with much success. In certain secondary involvements, however, the outcome is more encouraging. Rogers and Torrey[3] report a series of 98 gonorrheal joints treated with a polyvalent serum; 80 per cent of the cases were cured or much improved; 20 per cent showed slight or no improvement. Not much can be hoped for in chronic cases with structural changes in the joints. Porter[4] had similar favorable results in 7 cases of gonorrheal joints. He thinks the cases remarkably free from complicating disabilities. Moreover the primary urethritis seemed to him to be favorably affected. Swinburne[5] was much impressed with the action of Rogers and Torrey's serum in 11 cases of gonorrheal epididymitis. In two cases treatment was instituted very early (in 8 cases within 24 hours), and the course of the disease seemed to be remarkably modified and shortened."

Of the vaccine treatment he says that "the use of vaccines in gonorrheal joints has been followed, in most instances, by favorable reports. Cole and Meakins,[6] in an experience with 15 cases, thought distinct benefit was conferred by inoculation. At the Massachusetts General Hospital, Dr. H. F. Hartwell has treated 31 cases (as yet unpublished), with encouraging results." Similarly, Irons[7] reported 40 cases of gonococcus infection, including 31 cases of arthritis, and believed the vaccine treatment of great value in hastening the recovery. Later papers by Lee,[8] Whitmore,[9] Ballenger[10] and Eyre and Stewart[11] have given further favorable reports on the treatment of gonorrheal arthritis. In the communication of Eyre and Stewart, published in July, 1909, a very careful and elaborate clinical study was made of the vaccine treatment in 53 cases of gonorrhea of varying grades of severity, and their summary is of great interest, as it seems to be in accord with the results obtained by the majority of competent observers.

They state that in acute gonorrhea the gonococcus vaccine is markedly toxic, and for routine work (hospital out-patients, etc.) is not devoid of danger, and requires considerable caution. In simple chronic gonorrhea, when the gonococcus has ceased to be the infecting organism the cases are on a par with other chronic inflammatory states, but are frequently more difficult to cure, owing to environment and local conditions. Chronic cases, where the gonococcus is the sole infecting organism, have a better prognosis from the point of view of treatment by vaccine than a mixed infection, or one by staphylococcus only. In chronic gonorrhea, with complications, where the gonococcus alone is the infecting organism, routine injections of one to two million organisms every three to five days are safe and satisfactory; a lapse of five to seven days after doses of five million, an interval of seven to eight days after inoculations of ten million. The use of large doses is even more dangerous than in acute cases and may lead to disastrous consequences. In orchitis small doses of vaccine quickly relieve pain, and cause a more rapid abatement of symptoms than obtains by the usual routine treatment alone. In arthritis the results showed that the treatment was of considerable value.

Of especial interest to us are the reports by Eyre and Stewart of four cases of gonorrheal iritis, in all of which the gonococcus was isolated. The results are shown in the following table:

| | Age. | Sex | Duration of illness before treatment. | Duration of iritis. | Doses. | Size of dose in millions. | Average interval. | Under observation. | Results. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | M | 10 mos. | 3 mos. | 6 | 2-10 | 7 days | 6 weeks | Cured |
| 2 | 25 | M | 5 mos. | 1 mo. | 3 | 2.5-5 | 10 days | 4 weeks | Cured |
| 3 | 23 | M | 1 mo. | 1 mo. | 4 | 1-2.5 | 5 days | 3 weeks | Cured |
| 4 | 22 | M | 1 mo. | 3 wks. | 3 | 1-2.5 | 6 days | 3 weeks | Improved |

This shows that three cases were cured in from three to six weeks, and one was improved. In all four the polyvalent vaccine obtained by the growth of several strains was employed. They found that the severe pain, which is a marked and obstinate feature, is relieved in forty-eight hours after an injection, and disappears in from three to four days, and that cure was much hastened. Aronstam[12] also reports favorable results from the use of the method in the treatment of gonorrheal iritis.

These results agree with those observed in the case reported this evening, and are entirely at variance with those reported by Dr. Posey last year. (In Dr. Posey's paper he says that the injections were made with serum, but he tells me that it was the vaccine and not the serum which was used.) Aside from arthritis and iritis, the most uniformly successful results have been reported in the treatment of vulvovaginitis in little children, notably by Butler and Long,[13] and by Churchill and Soper.[14] In these cases the observers believe that local treatment is unnecessary, and cure is effected by the vaccine inoculations alone.

Examination of the somewhat conflicting evidence shows that the method is not of much value in acute gonorrhea or in gonorrheal conjunctivitis; it is of considerable value in chronic gonorrhea and in vulvovaginitis, where there is not a mixed infection; and is of very great value in complications, such as arthritis and iritis—in other words, in metastatic conditions. If the results in iritis are further confirmed, we have in our possession an exceedingly valuable method for the treatment of one of the most rebellious and painful types of ocular inflammation which come under our observation, and it should be given a further trial.

As to the question of the employment of so-called homologous or heterologous strains—in other words, whether it is necessary or not to isolate the organism from the individual case, and produce the vaccines therefrom—all agree with Irons,[7] who says that "at least for the metastatic conditions the homologous vaccines are equally efficient, and that at least for the present, the dead cultures must be prepared from heterologous organisms, for in many cases it is not only impracticable but impossible to obtain the so-called homologous strain."

Not so much uniformity is found in respect to the size of the dose. Eyre and Stewart used injections of from 1 to 10 million, and believe that the larger doses are unnecessary and dangerous, whereas most of the American authors (including Cole and Meakins, Irons, etc.) have found doses of from 50 to 300 million more efficacious and free from danger. Much, of course, must depend upon the preparation employed. In the one used in our case (Mulford's), no local or general reaction occurred after doses of 100 million, and prompt results were obtained. In the treatment of metastatic conditions it would seem advisable to push the injections with as large doses as the patient will tolerate, in order to secure the results as rapidly as possible.

There are other questions of considerable importance in connection with the subject, such as the value of watching the opsonic index of the patient during the treatment, the possibility of the use of the inoculations for diagnostic purposes, etc., but their consideration would lead us too far afield. The fact that relatively few cases of iritis have been reported as treated by vaccines would seem to indicate that the ophthalmologists have been too conservative and have not taken advantage of the newer methods of treatment of the bacterial infections, and this should stimulate us to more active work along these lines, particularly in combating the gonococcus, which can no longer be considered as causing a purely local process, but one which is followed by many and far-reaching complications, which require both local and constitutional treatment.

*2007 Chestnut Street.*

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# TWO CASES OF SUCCESSFUL EXTRACTION OF SENILE CATARACT FROM THE EYES OF LEPERS.

T. J. Dimitry, M. D.

(From the Department of Dr. H. Dickson Bruns, Eye, Ear, Nose and Throat Hospital, New Orleans, La.)

These cases are reported at the suggestion of Dr. Bruns, to show that leprosy, as we see it in Louisiana, presents no contraindication to the extraction of the cataractous lens; nor does it seem to influence the subsequent course of the healing.

Both were uncomplicated senile cataracts and were coincident to the leprous dyscrasia, for neither case presented any leprous condition of the eye, with the possible exception of a madarosis of the eyebrows.

It is well known that there are not a few lepers in Louisiana, and that in this State is one of the few leper hospitals in our country. It may have been due to negligence that more cases of cataract extraction in lepers have not been reported; undoubtedly, many have been operated on for this condition. In reviewing the American literature but few case reports have been found. Lopez speaks of the successful extraction of a senile cataract in a leper by Dr. Montalvo (*Archives of Ophthalmology,* N. Y., 1889, Vol. XVIII).

All leprologists agree that the eye is one of the organs most frequently affected in leprosy, and, according to Dr. Karvin, of Norway, two-thirds or even three-fourths of the lepers have ocular lesions. Dr. Lopez, of Havana, says that over half of the lepers of this country suffer with their eyes. If one were to include the adnexa of the eyes, that is, the eyelids, the percentage would be much greater, and one may be assured that during the progress of the disease the eye will be an important object of study.

Arthur Neve reports, in the *British Medical Journal,* 1900, that out of the eighty cases at the State Leper Asylum of Kashmir, twenty showed affections of the eyes. As would be expected, the proportions are larger in the tubercular cases than in the anesthetic. In the tubercular cases the ocular affection is essentially one of infiltration, and in the anesthetic cases of injury from exposure (neuropathic) Neve says that he does not remember seeing any cases of cataract consecutive on ocular leprosy.

Poncet, Wolters, Lie and Neve, mention that the lens is often cataractous in leprosy, but the bacilli are absent. Ordinary senile cataracts are common according to these authorities. (Parsons—*Pathology of Eye,* Vol. II). Dr. Bruns, in 1883, in *The New Orleans Medical and Surgical Journal,* reported three cases of leprous disease of the eye. Dr. Bemiss and Dr. Bruns at one time compiled some excellent statistical information on leprosy of the eye, which is to be found in the Reports of the New Orleans Charity Hospital.

Both of our cases were of the tubercular form and the diagnosis was made from general appearances; no other examination was undertaken. True leprous invasion of the eye consists in the formation of a leproma at the corneo-scleral margin, and is usually concurrent with an iritis. Franke and Delbanco say they have often seen a leproma form in the ciliary body and by pressure cause changes in the lens, and frequently its dislocation.

Case 1. S. P., white, male, 56 years of age, a hostler; came to the hospital complaining that he could not see so well with the right eye for about seven or eight months. Examination with the ophthalmoscope and oblique light showed senile cataract, mature; in the left eye senile cataract, incipient. Light perception, light projection and pupillary reaction were good. The vision O. D., moving fingers when held close: V. O. S. xx/lxx. The conjunctivæ were normal and there were no leprous changes in the eyes. There was madarosis and the leonine appearance, due to leprous infiltration of the skin of the face. Before advising operation we tried to improve vision in the left eye with glasses, but with no success. An operation was advised and five days later the lens was extracted. The usual test bandage was used and the conjunctiva found clean.

Anesthesia was produced by the injection of the cocaine-adrenalin-normal salt solution (Robin) under the conjunctiva near the lower border of the limbus eight minutes before the operation. The extraction, performed by Dr. Bruns, was the one commonly employed in our clinic; the incision occupying about the upper-third of the cornea, with the conjunctival flap and iridectomy; capsulotomy being done with the knife-point after the puncture. No accident; iridectomy painless; Blanc's collodion dressing covered with a cataract cage. Immediately after the operation, the patient was allowed to return home and at no time was he confined to the house or bed. The next day he reported at the clinic, saying that he had rested well all night and had had no inconvenience. The dressing was not removed. On the third day the bandage was removed and the eye found to be in good condition. The pupil was black; the iris very slightly reactive; angles of the coloboma clearly defined; no striped keratitis. Collodion dressing and cage re-applied. Twelve days after the operation the dressings were discontinued and dark glasses given.

Oblique light and the ophthalmoscope showed a good central opening in the capsule and the fundus normal; ophthalmometer: O. S. + 1.75 D. C. ax. 5°. With a + 12.00 sph. V. 20/xl; with + 16.00 S. = Sn. No. 2. Discharged twenty-eight days after operation.

Case 2. G. M., Malay, male, 60 years of age, occupation fisherman, came to the hospital complaining of the right eye failing him for two months. Examination showed O. D. cataract, senile immature, and O. S. cataract, senile incipient. The usual examination as to the condition of the fundus was made. The eye showed no leprous changes. Preliminary test bandage used. Under local anesthesia by injection, as in preceding case, Dr. Robin removed the lens without accident by the combined operation. Very slight striped keratitis. Patient progressed nicely up to the date of his discharge, on the twentieth day. Fitted with glasses; with a +10 S. V. 20/xxx.

It is well to note the vision in each of these cases, 20/xl in one and 20/xxx in the other, and that they were discharged, the one in twenty-eight days and the other in twenty days. We have here the best evidence of the total lack of influence of the leprous state upon cataract extraction, and we reiterate, that both were treated as walking cases, never having been confined to bed or even to the house.

# VITILIGO IRIDIS—REPORT OF TWO CASES.

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PHILADELPHIA.

During one of Prof. Fuchs' lectures which I attended in 1905, he called attention to a rather uncommon appearance of the iris,—an anomaly characterized by the distribution of small white or greyish-white spots on the anterior surface of the iris, which condition, termed vitiligo iridis, he considered almost pathognomonic of a previous attack of variola.

Since that time I have seen this anomaly twice, both times in colored patients. The first patient, a healthy young colored woman twenty-seven years of age, consulted the Eye Dispensary of the German Hospital, service of Dr. W. T. Shoemaker, in August, 1908, for relief of asthenopic symptoms. In the right brown iris there were seen from eight to ten greyish-white, circular and irregularly ovoid spots, about ½ mm. in diameter, and principally located in the ciliary zone. In the left iris, there were about six similar non-pigmented areas, most of these too being present in the ciliary zone of the iris.

The irides otherwise presented normal appearances and reacted freely to the light stimulus. The media were clear and there was no visible pigment disturbance in the fundus. The patient had measles thirteen years ago; variola seven years ago; no history of previous ocular disease could be elicited.

The second patient was a sixty-year-old colored man who presented himself for treatment at the Eye Dispensary of the Pennsylvania Hospital, service of Dr. W. T. Shoemaker, in August, 1909. In both eyes there were signs of a chronic iridocyclitis, vision in OD being reduced to 1/60; in OS to 6/20. In the lower portion of the left brown iris were four greyish-white spots about 1/2 mm. in diameter, none being discovered in the right eye. The patient had variola twenty-seven years ago and possibly a luetic infection seven years ago.

There was no question about either patient having had variola, well-marked pitting being present in both cases. In both cases there was no atrophy of the iris tissue, as is sometimes seen in association with iritis or glaucoma. The spots appeared to be merely due to an absence or bleaching of the stroma pigment, the adjoining iris tissue being unchanged, at least to gross inspection. Some of the lesions appeared to be in a plane slightly behind the anterior surface of the iris. Transillumination showed the pigment layer to be intact.

H. Müller was the first to describe this affection, publishing his observations in the *Beiträge zur Augenheilkunde,* Heft VIII, 1892.

His first case described occurred in a twenty-seven-year-old man who had variola in childhood but no other infections. In both irides were seen numerous white spots, about pinhead size, mostly confined to the ciliary zone. Most of these spots were round, others oval or biscuit-shaped. The irides otherwise were normal and the fundus findings negative.

The second case was observed in a man of sixty, who also gave a history of variola. In the right eye, there was occlusion and seclusion pupillæ, the left eye being normal. In both irides the characteristic spots were present, which the patient however claimed antedated his variola. Microscopical examination of a portion of the iris, obtained by iridectomy performed to improve vision, showed these spots to be the result of circumscribed areas of achromasia in the anterior boundary layer of the iris.

In a third case, the iris presented similar appearances and a history of variola was also obtainable.

In every case, the iris was of a brown color. Müller considered the condition probably of congenital origin, due to prenatal influences affecting certain groups of the future pigment-bearing stroma cells, or, if occurring in later life, perhaps in some way related to variola, when a destruction of pigment must be assumed.

Since the report of Müller's cases, I have not been able to find the report of any other so-called cases of vitiligo iridis. Fuchs in his text-book mentions having seen several cases, in all of which there was a history of variola, and is convinced that the disease must have some bearing on the iris condition.

Krückmann, in Graefe-Saemisch, describes a similar appearance of the iris in association with secondary syphilitic eruptions. This "specific leucoplasia" of the iris is characterized by the appearance of circumscribed non-pigmented areas on the anterior iris surface, the spots being generally with angular contours, prone to coalesce and only observed in brown irides. Iritic manifestations are absent, and whether these changes should be considered sequelae of iris papules, he was not able to determine. The condition endures several months, when usually a regeneration of chromatophors with complete restoration of pigment ensues. Krückmann has never seen similar abnormalities of the iris unless complicated with signs of a previous iritis.

Hirschberg describes a case of chronic specific mydriasis, in which the brown iris exhibited several greyish blue, slightly depressed spots.

The history of the two cases just cited is additional evidence in favor of the view that vitiligo iridis is most frequently traceable to a variola infection. The association of this anomaly in the reported cases almost invariably with a previous history of variola can hardly be considered a mere coincidence. The condition probably also occurs in lighter colored irides, but owing to the sparse distribution of stroma pigment in these cases, it is either not noticeable or so poorly defined as to be easily overlooked.

Of interest in this connection is the report by Stellwagon of a case of extensive cutaneous vitiligo occurring six months after an attack of variola.

While the effects of the specific toxin may lead to a temporary vitiligo of the iris, the effects of the variola toxin seem to be permanent. Further observations are necessary, however, before positive statements can be made as to the true relationship between variola and this curious appearance of the iris.

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# A CASE OF COMPLETE ALBINISM: OBSERVATIONS ON THE CHANGES IN THE DIAMETERS OF THE LENS AS SEEN THROUGH THE IRIS.*†

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The noteworthy investigations of albinism by Nettleship and Pearson, and by Lagleyze, and the reports of individual cases by scattered observers, make it seem worth while to record this case. The interesting speculations by Sisson and C. E. Woodruff on the ocular effects of the short wave light rays, especially in countries where excessive sunshine prevails, and Woodruff's recent suggestion of using amber-tinted lenses to shut out those rays, further justify a description of this Colorado albino child and the effect of such lenses upon her distressing photophobia, for the past year and a half. The pupillary reflexes in irides wholly devoid of pigment and largely so of stroma seem worthy of remark; while the novel opportunity of making measurements of the lens diameters with the ciliary muscle in action and at rest lends interest, if not importance, to this report.

H. D. C., a girl of three years and eight months, was brought for examination, October 18, 1907. Her mother and aunt stated that at birth the child's hair was silver gray, and had become snow white in nine months; at which time they noticed low alternating convergent squint, which had come and gone ever since. Photophobia had been constant, and vision much depreciated; small objects like pins not being visible, and all things being held close in the effort to see. Her health had been and was still excellent, and her mind bright and active. She was an only child; the mother being rather dark, the father reported to be "very fair, with brown hair, blue eyes, and white eyebrows and lashes." The mother had experienced no miscarriages. Neither the intermarrying of relatives nor any case of complete or incomplete albinism was ascertainable as far as the family history was known, for four generations; unless the father's "white" (described as "pale yellow") eyebrows and lashes could be taken as a partial albinotic manifestation.

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* Shown before the Colorado Ophthalmological Society, October 19, 1907.

† Read before the American Ophthalmological Society, New London, Conn., July 14, 1909.

Examination showed a pink skin, white hair on scalp, brows and lids, light blue irides, photophobia, lateral nystagmus, which was rarely absent, and alternating strabismus, with 2 to 3 mm. of esotropia. There was absence of the uveal pigment, the red reflex of the chorioid showing through both iris and sclera; causing the iris to look pink in daylight, and giving a firelight glow through pupil, iris and sclera when the interior of the eyes was illumined in the dark room. Each iris was very thin, only the sphincter pupillæ and scattered radiating fibers showing. Through the thinned irides the entire circumference of the lens margin could be plainly seen.

Under cycloplegia from homatropin, enforced by atropin, skiascopy revealed mixed astigmatism of 4. D. in each eye. Full correction was prescribed, as follows: R. and L.—2. sph. ⌢ — 4. cyl. ax. 80°, ground in amber glass, shade of number 2 smoke. Under their use vision greatly improved at once, the photophobia disappeared immediately, and the nystagmus and squint were reported to be much lessened at the end of one month, and also after two months had elapsed.

The following measurements of the pupils were taken on different days: Under 1/20% eserin, 1.5 mm.; in bright light, 2 mm.; in a darkened room, 4 to 4.5 mm.; under 1¼% homatropin hydrobromat, 5.5 mm., and with 1% atropin sulphat, 6 mm.

Because of the thin irides the unique opportunity was afforded of making accurate measurements of the lens in moderate and in extreme accommodation, and under full cycloplegia. With the eyes accommodating at 40 cm. the transverse diameter of the lens was 9.5 mm. Two hours after the instillation of 1/20% eserin it was 9 mm., and two hours after the use of 1% atropin it measured 10 mm.

A 10. D. spherical lens, held 10 cm. in front of the cornea, was used in taking these diameters. Dr. Edward Jackson verified and concurred in these measurements of the lens diameters, the pupils and the refraction.

Under date of April 19, 1909, the child's mother wrote that improvement in vision continued and the disappearance of the photophobia remained unchanged, but that the nystagmus had returned and the squint had become fixed in the right eye. Thereupon remeasurement of the refraction was advised, in the hope that the squint and nystagmus might again be benefited, and the vision further increased, by the correction of a new development in the ametropia.

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# REPORT OF TWO CASES OF RETINAL PHLEBITIS FOLLOWING INFLUENZA.*

Edgar S. Thomson, M. D.,

New York.

Retinal phlebitis, or thrombosis of the central vein, is an uncommon condition, but one with whose appearances we are all familiar. It occurs in two main clinical forms,—the one, involving the entire central vein; the other, involving one or two branches. The cases involving the entire vein are the more common, and are apt to go on until either the vision is destroyed by repeated hemorrhages, or a severe attack of secondary glaucoma supervenes, necessitating enucleation. These cases have almost all of them a widespread arterio-sclerosis as their basis; they occur more frequently in advanced age and have a bad prognosis. A few cases are reported where arterio-sclerosis could not be demonstrated, and a few others where the condition followed acute febrile conditions. My two cases followed severe attacks of influenza, of the variety which is known to lead at times to phlebitis and thrombosis elsewhere (high fever and marked depression), and involved only the inferior branches in one case, while in the other the superior branches were also somewhat affected. Both cases were of a relatively mild type.

Case 1. Mr. Y., 48, consulted me in May, 1899, for the correction of his refractive error,—a myopia of 4 D. His vision was 20/15 in each eye, with the correction. There were no evidences of chorioidal disease, and the fundi were normal. He lived quietly and methodically, and was apparently in perfect health. He came to me about once a year after this, for slight changes in his lenses. I saw him in July, 1908, and made some few changes in his formula, and then did not see him until August, 1909, when he told me that he had had in August, 1908, a sharp attack of grippe with high fever, followed by pneumonia. After his recovery he went to Berlin, and while there, about one month later, the vision in the left eye became slightly hazy. He consulted Dr. Hirschberg, who told him that he had "disease of the vein," and that it was necessary for him to be very careful in his mode of life. He gave him some general directions, and prescribed iodate of soda, in ten grain doses, three times a day. He was under observation until February, when he was considered almost well. There was no appreciable reduction of his vision.

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* Read before the Section on Ophthalmology of the New York Academy of Medicine, Dec. 20, 1909.

In March, 1909, being then fifty years old, he had another attack of grippe, and on his recovery noticed that the vision was somewhat reduced. It must have been about 20/70, as nearly as he could tell. At this time he was told that he had a slight effusion of blood, which probably came from arterio-sclerosis, although beyond the urinalysis and heart examination this question seems not to have been very thoroughly investigated. I saw him August 31. At this time, there was a large patch of retino-vascular change to the infero-temporal side of the nerve, and occupying an area some six or eight times as large as the optic disk. The two venous trunks were enormously dilated and tortuous, and the arteries were much reduced in size, though not enough to lead to the supposition that they were obliterated. The retina was opaque and whitish in the affected area, and there were numerous small extravasations of blood through the area, as well as for some little distance beyond it. The vision was 20/50+.

On account of the fact that the hemorrhages were so slight, as well as from the history of the onset, I believed that the case was one of phlebitis following influenza, and set about having a careful examination made to exclude arterio-sclerosis. This was unfortunately interrupted by a fresh attack of pneumonia, from which he died, September 12th, but so far as his general physician, Dr. E. G. Zabriskie, had gone, he found no evidences of vascular change, and I do not myself believe that any marked amount of arterio-sclerosis existed. My prognosis to him was guardedly favorable.

Case 2. Mr. W., 39, consulted me September 28, 1909, In May, 1908, he had had a sharp attack of influenza, with high temperature and great prostration, part of the time being unconscious. About two or three weeks after his recovery the right eye had become slightly blurred. He consulted a local oculist, and was treated for nearly a year, presumably with mercury and iodides. At the time I first saw him, the corrected vision was 20/40, and on my examination October 9, the vision was 20/20—. The vision had at first been reduced to about 20/70. The ophthalmoscopic picture was similar to that of the first case, but not so severe, and was entirely lacking in hemorrhages. A spot of haze extended from the lower part of the disk, downward along the course of the inferior branches of the vein, for the distance of about two disk diameters. The veins were much obliterated. Two superior veins were also somewhat dilated, and the disk was distinctly redder than that of the opposite eye. Through the kindness and skill of Dr. Alfred Braun, I am able to show you a very accurate picture of the condition. (See frontispiece.)

The absence of hemorrhages in this case was rather remarkable, but it is possible that during the year that had elapsed, some small hemorrhages might have occurred and have become absórbed without leaving any traces.

A careful physical examination by his general physician, Dr. J. B. Zabriskie, failed to show any signs of arteriosclerosis. The heart sounds were normal, blood pressure 135, urinalysis negative, and no evidences in the peripheral circulation nor any conditions in the general health of unfavorable significance. In fact his general health seemed in every way good. As far as I am able to ascertain, the condition has changed but little since its onset, and my own opinion is that, if he can live so as to avoid hemorrhages or other complications, he may in time recover. He is taking ten grain doses of iodide of potassium three times a day, and is on a definite regimen of diet, etc. He is under the care of his general physician, who is using every means to increase his nutrition, and to keep the blood pressure from rising.

In a very cursory examination of the literature of the subject, I have been able to find four similar cases. Coates, *R. L. O. H., Rep.* for 1904-6, page 515, reports a case, No. 6, in a man of 21, with thrombosis of the left temporal vein. "The onset occurring probably during an attack of influenza, a fortnight before." This eye became rapidly glaucomatous, and finally, after other means of treatment had failed, was enucleated. Coates has reported two other cases following influenza, and he also quotes a case of Würdemann's in which phlebitis followed an attack of mumps. Phlebitis in influenza is not at all rare, and as a rule, the more severe the intoxication, the more likelihood there is of phlebitis or thrombosis. Finkler's *Twentieth Century Practice of Medicine,* Vol. 15, page 225, says, "Phlebitis and thrombosis frequently make their appearance during the period of convalescence. According to the report of the Collective Investigation Committee, disease of the femoral vein was with few exceptions present." F. Teissier, Paris, 1893, p. 117, says: "Influenza phlebitis is not at all rare; besides the cases described abroad, I can mention five cases of my own. In two cases there was a bilateral phlebitis of the lower extremities. In both cases it resulted from an influenza pneumonia."

The exact pathology of the eye cases is not definitely determined, owing to the fact that most of the examinations have been made of extensive cases in which glaucoma has supervened, so that it was difficult to trace the sequence of events. Harms (*A. f. O.*, p. 11, 1905) concludes that the following lesions have been proved by histological examinations: (1) Thrombosis of the vein; (2) disease of the vein wall; (3) a combination of (1) and (2); (4) compression of the vein from without (very rare). Parsons says (vol. 4, page 1287) that "in one case the changes show proliferation in the connective tissue wall of the vein, with slight endothelial proliferation," and thinks that the changes in the retinal vein are probably usually of this kind. He further says, "Probably we may have either the proliferation of the intima, or proliferation of the connective tissue of the venous wall. Hyaline degeneration occurs perhaps as a primary condition, or, as is more probable, a secondary change. The organization of thrombi in the vessel lumen is probably secondary to the vascular changes, although there are certain anatomical causes, as the changes in the vessel walls at the lamina cribrosa, and their increased tortuosity, that may have an influence in determining the location of the lesion. In Coates' case, No. 2, the thrombosed vein took an unusually curved course. The hemorrhages probably do not come from the newly-thickened walls, for there is no reason to think that the new formed substance is any weaker than the original wall, but they are no doubt produced by the damming back of the blood owing to the narrowing of the lumen, and by the giving way either of the unthickened veins, more peripherally, or of capillaries which are incapable of much thickening."

The fact that the same veins peripherally through the affected area were fairly normal in the two cases reported, is strongly suggestive of phlebitis as the primary condition, but in the histological examinations that have been made, notably by Coates, there is no evidence of a definite inflammation—leucocytic infiltrations and cicatrizations—so that the term phlebitis, although expressing most nearly the condition, must be used with certain reservations.

From the description of the pathological condition, we should expect that the recovery would be as slow as in corresponding conditions in other parts of the body, but that recovery may occur is shown by two cases reported by Coates and Parsons, in which complete recovery occurred with vision equaling 6/6. It is most important, primarily, to exclude arterio-sclerosis by a careful examination of the peripheral vessels, vascular tension, heart, urine, and general symptoms, as, of course, the presence of an advanced arterio-sclerosis very materially adds to the gravity of the condition. If arterio-sclerosis is not present, the treatment should be directed mainly to the regulation of the diet and personal hygiene of the patient, the control of the arterial tension, and the increase of the general health and nutrition.

*19 East Forty-fourth Street.*

# PERFECT OPTICAL WORK.

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NEW YORK.

While dining, last winter, with a patient of a certain famous oculist, I was astonished to hear her remark that the glasses he had given her had always been uncomfortable, and that, furthermore, she had never yet seen one of his patients who was really comfortable. Believing this oculist to be the equal of any refractionist in the country, I told her that such conditions must be due to imperfect work on the part of the opticians who made the glasses. Subsequently several of this man's patients came to me, and in not one single case did their glasses correspond with his original prescription, which if properly filled would no doubt have given complete comfort. To prevent such injustice to both doctor and patient is the object of the present contribution, and the only way to accomplish this seems to be for the oculist to know as much, or more, about the manufacture of lenses and frames than his optician does, and to compel the latter to make the spectacles prescribed, *optically* correct, rather than *mechanically* correct. In order for him to do this he should:

*First*:—Visit the workshop of the optician to whom he sends his patients and see that the following method, which is now in use by the best opticians in New York City, is uniformly followed:

A. The lens after being cut in the rough must be carefully marked with a modern five-dot centering machine with rotating cross lines on the dial.

B. After the lens is cut and edged it should again be marked on the same machine, and, if a rimless glass, the post holes should then be placed on the horizontal line thus found, not on the long axis of the oval, which would be simply perpetuating any mistake made by the first operator in performing process A.

C. The operator who straightens the frame should, before doing so, again center and mark the base line of the lens with the same centering machine, using only the three inner pins, and then bend the nose-piece of the spectacles so that the *three dots on the right lens are on a straight line with the three dots on the left lens,* thus making the prescription optically correct, instead of mechanically correct, which is of no consequence. In the case of eyeglasses these three dots should be left on both lenses and adjusted with the help of a ruler or large card so that they are on a straight line when the glasses are in position on the patient's nose. This part of the work is most important as, up to this point, it is commercially impracticable to construct spectacles which are correct within 2°, and many patients are made uncomfortable by even so small an error.

D. The finished spectacles or eyeglasses, with the number of the prescription attached, should then be handed to a fourth operator without any formula, and by means of a lens measure, test glasses and centering machine, this operator should note on a piece of paper what he finds the formula of the glasses actually is.

E. This paper, with the glasses, should then be sent to the Manager's desk, and there compared with the oculist's original prescription.

The above method is now in use by thirteen opticians, in and around New York.

It is practically impossible that prescriptions sent to these firms will be delivered to the patient other than exactly as prescribed by the oculist. Of course all things mortal are fallible, and if the machines, and this method are used carelessly, mistakes will sometimes occur, but with a fair amount of conscientious attention on the part of the opticians, those who use this method will turn out work that is *optically* perfect, enabling the oculist to make his patients comfortable, and feel perfectly sure that he will not have the experience from which the oculist above referred to has suffered.

*Second*:—The oculist himself should own a modern centering machine, besides the lens measure and test glasses, which we all possess, and before allowing his patients to wear their glasses he should use the following method:

Examine each lens with a lens measure, and with the formula then found as a basis, neutralize the lenses, that is, place next to each cylinder the opposite cylinder of the same strength at its axis, then do the same with the spheres. Look at some object twenty feet away and move the lenses up and down, and to right and left, noticing if the object in the center moves when you move the lenses. These directions are very important, as in thick glasses, unless each neutralizing lens is next to its opposite, there will be movement of objects when the lenses are moved, even though the right neutralizing lenses are used.

If the neutralizing lens, based on the examination with the lens measure, produces movement of an object looked at, with the movement of the lenses, increase or decrease same until the lens is perfectly neutralized.

Write the formula thus found on a piece of paper and then ascertain the axis by means of a centering machine, which is absolutely indispensable, as it is impossible without a centering machine to tell either the strength of a prism within ½°, or the axis of a weak cylinder within 10°. It is better to have a modern machine because the older forms of this instrument take so much time that a busy practitioner will, on this account, very naturally perhaps, shirk this part of the work.

When you have written the formula thus found, sphere, cylinder, axis, and prism, if any, on a slip of paper, compare it with the original prescription given to your patient. *If you wish to preserve your scientific honesty do not examine your prescription first, for if you do you will be unconsciously influenced to think the glasses are right when they may be slightly wrong.*

If the glasses contain the wrong lenses they must of course be sent back, but a wrong axis may be corrected by the oculist himself by the simple method of placing three dots on each lens with the centering machine (being careful that the center dot is over the optical center of each lens) on what should be its base line, with the axis of astigmatism where you have prescribed, bending the nose-piece of the frame so that the three dots on the right lens are continuous with the three dots on the left lens.

If is safer to place these dots on the lenses in every instance, for if the posts in a rimless glass have not been set in on the base line of the lens, the axis of the cylinder will not correspond to that of your patient's astigmatism, even though the lenses are cut correctly and the posts of the frame are on a line.

The above rule applies to spectacles. However, in eyeglasses also it is necessary to put these three dots on the lens, but they must always be adjusted while on the patient's nose, so that the three dots on the right lens are on the same straight line with the three on the left lens, doing this by holding a long card or ruler in front of the patient's eyes, to take the place of the straight line with which you adjust spectacles previous to putting them on a patient. Without the three dots on what should be the horizontal line of each lens, it is impossible for any man, oculist or optician, to invariably adjust eyeglasses correctly within 5°.

Nothing is more important than the proper centering of lenses. For instance, one of my patients, a busy practitioner, has hardly ever had a comfortable moment in twenty-two years, on account of pain in the head and eyes, and this in spite of the fact that he has been to very good oculists. By using a mydriatic test, I prescribed,

O. D. — .50 + 2.50 cyl. 9° = 20/10
P. S. — .37 + 1.87 cyl. 150° = 20/10

He returned to me wearing the glasses (although I had forbidden him to do so until I had seen them) saying they were all right except that he could not look at a bright light without his eyes watering. My centering machine revealed the fact that while the mechanical centers of the lenses were the right distance apart, 65 mm., the lenses were so much decentered that the real distance between the optical centers of the lenses was only 59 mm., and the optical center of the right lens was above the mechanical center. On remedying this, myself, with forceps, he could look into the bright reflector of my reading lamp without the least unpleasant sensation. Doubtless if the oculists whom he consulted had pursued this method their formulas would have given him as complete relief, but as he was allowed to wear glasses different from those they had prescribed, their good work was without result.

Finger-piece mountings are adjusted by the same method which you use with spectacles. In spectacles adjust the side bows, and in eyeglasses adjust the clips, so that the center dot is over the center of each pupil when the patient is looking at an object twenty feet, or more, away.

Hold the lens up to a bright light and see if there are any bright spots in them caused by any imperfections in the glass. This is a common cause of discomfort.

Curved or Toric lenses are very frequently ground inaccurately, as regards the power and centering of the lenses, and it is my belief that they should be used only in the case of far-sighted persons using spheres more than + 4.

### FRAMES.

*Side Bows.*—The frame is as important as the lens, although only the best oculists pay any attention to it. If the patient is wearing spectacles be sure that the side bows are extra heavy, for lighter ones will not long keep the lenses in position. Be sure that the bows fit the curvatures of the ears and do not cause pain at any part of the ear. Part of the popular objection to spectacles is caused by not fitting the ears properly. Many patients have one ear set farther back than the other, therefore take hold of the spectacles by the two sides and ascertain by pulling whether there is the same amount of tension on each side bow. Notice also if each lens is the same distance from the eye.

*Shoes.*—Neither opticians nor oculists make a practice of examining the shoes of a rimless glass to find out whether the frame is movable at this point, nor do they instruct the patient always to hold only the lens of rimless glasses while cleaning them and never to hold them by the frame.

Adult patients have returned to me some time after their glasses had been prescribed complaining that their spectacles were no longer comfortable, and I found that the shoes were so loose that the lenses could vary 10°.

This illustrates also another important point in the manufacture of glasses, which is, the proper way in which the shoe of the frames should be attached to rimless glasses. It should be done firmly but not closely, and the best way to accomplish this is by bending the ends of the shoe slightly on themselves, in this way attaining firmness without closeness. A shoe that is too close will break a lens.

One of my patients had the misfortune to have two new pairs of perfectly fitting glasses cracked within twenty-four hours from this cause, i. e., too tight a shoe, and as she lived at a distance from town the annoyance was very great and I nearly lost her as a patient as a result.

*Close Side Bows.*—Some time ago I noticed that my own spectacles never stayed straight for more than ten minutes at a time, and was unable to find a cause for this. The consequence was that I was never comfortable more than a few minutes. My optician finally discovered that it was due to the fact that the side bows were bent out further than necessary before being stopped by the knee at the outer joint. On bending the bows in so that the knee hits before the side bows are wide enough to go over the ears, the spectacles will not change their position, as they will do if the side bows can move at the joints after the spectacles are in position.

*The Bridge.*—The bridge must be of the right height so that the center of the lens is over the center of the pupil of each eye, and far enough from each eye so that the eyelashes and the eyebrows do not touch them. The bridge should be so tilted that its angle is parallel to the line of the nose at the part on which it rests, as otherwise it is liable to cause a running sore, as will also happen if the side bows are too tight.

*Patent Frames.*—I have tried every patent device for spectacles, including half or full cable temples, and fancy arrangements on the bridge of the nose, and can truthfully say that, when there is any astigmatism, I believe these to be perfectly useless, if not actually harmful.

We are responsible for the welfare of our patients, and so are answerable not only for our own mistakes but for those of the optician also. By the method of marking and adjusting lenses herein suggested for the use of opticians and oculists, all glasses will be absolutely correct unless four people make exactly the same mistake, which seems hardly possible. So, if every oculist who reads this article, will at once visit the shop of the optician to whom he sends his patients, and insist that this method be there adopted, and in addition to this will himself use a centering machine, in conjunction with his lens measure and test glasses, the present slipshod methods of filling oculists' prescriptions will cease, four-fifths of the discomfort which patients now suffer will be a thing of the past, and the goal be sighted for which we are all striving—perfect optical work.

*Broadway and 97th Street.*

# THE TREATMENT OF THE LACRIMAL SAC.*

W. McEnery Brown, M. D., L. R. C. P., (London, Eng.)

Neustadt, Ontario.

An opinion of the section, as to the best methods to pursue, and the proper medication to utilize, in the treatment of lacrimal sac disorders, the most stubborn and at the same time the most disfiguring of all ocular affections, is to be desired.

In the whole range of ocular affections there are none in which opinions differ so much as to treatment as in diseases of the lacrimal sac. The Englishman pins his faith to injections, styles and destruction of the sac. The Eastern American advocates giant probing, while the Western American declares all these to be wrong, that the proper place to treat a dacryocystitis is in the nasal passage of the affected side.

In considering the treatment of this condition, a rapid glance at the anatomy of the parts concerned, may not be amiss. The canaliculi are two thin walled canals, about one-half inch in length, running horizontally inwards, lying in the upper and lower lids, and terminating internally in the tear sac. The latter is closed above but continuous below with the nasal duct. The tear sac fills the fossa sacculi lacrimalis—a groove formed by the lacrimal and nasal processes of the superior maxillary bone. Laterally the sac is covered by periosteum. The palpebral ligament crosses in front of it and is united with its anterior wall. The nasal duct—the continuation downwards of the lacrimal sac—is wholly enclosed in bone. It is about three-fourths of an inch in length and narrowest above at its junction with the sac. Its mucous lining shows folds and pockets, in which to our sorrow and the patient's misery, our probe frequently catches, in sounding. The duct opens below into the inferior meatus of the nose, usually on its roof, occasionally on its outer wall. The duct being surrounded by bone, cannot expand, therefore when secretion is in excess, swelling of its vascular lining produces stenosis and blocking. A nasal tear sac acts like a pump in forcing the fluid into the nasal duct by the action of the orbicularis palpebrarum and the resiliency of the sac walls.

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* Read in Eye Section, 42d Annual Meeting of Canadian Medical Association, Winnipeg, Manitoba, August 23, 1909.

*Etiology.*—Primary inflammation of the tear sac is rare. In the great majority of cases the trouble is caused in the first place by some nasal condition, a cold in the head, acute or chronic rhinitis, or, specific tubercular or lupoid ulceration. Deviated septa or hypertrophied turbinates predispose to it as does blocking of the outlet by growths, such as polypi.

The cause is mostly below, the results above. How rarely the converse occurs may be seen by the frequency of conjunctivitis without involvement of the sac. The nasal duct becomes blocked, causing retention of the sac contents. Bacterial invasion and putrefaction of the sac contents excite catarrhal inflammation of the sac walls, constituting a mucocele and finally a lacrimal abscess outside the sac.

*Symptoms.*—The symptoms are pain with redness and swelling of the lower lid. If left to itself spontaneous rupture may occur and a lacrimal fistula result.

*Diagnosis.*—The diagnosis is simple. Pressure upon the swelling causes extrusion of mucus or pus from the punctum. The disease has been confounded with periostitis, erysipelas, furuncle (but furuncle is never preceded by epiphora), alveolar abscess and tubercular, syphilitic or malignant disease of bone.

*Treatment.*—The treatment is unpleasant for the patient. It is a hardship and in many cases a torture; often the cure is worse than the disease. For that reason mild measures should first be pursued. The keynote of success is patience. The problem is the treatment of a catarrhal or purulent condition in a practically closed sac. The first consideration is to obtain free access to the cavity, then to provide free drainage for the same. Entrance is effected by slitting freely one of the canaliculi—preferably the lower—completely into the sac. The best position for this and the subsequent probing is with the patient sitting on a low stool—a towel over the head and the surgeon standing above him. Once access is had to the sac, syringing is begun. In sensitive patients a weak solution of cocaine may first be instilled. Also if adrenalin be first injected, contraction of the mucous lining occurs and the fluid passes more readily through the canal. Injections should be kept up for some time, even when they fail to reach the nose. Injections may be varied to suit the case. Boracic acid in 2 to 4% solution; alum and sulphate of zinc 1 to 2% solution; carbolic acid 1 to 40; nitrate of silver 2 to 5%; chloride of zinc 1 to 2%; bichloride of mercury 1-5000; protargol 5 to 10%; or argyrol 20%. In connection with albumenoid preparations of silver, it is to be remembered that their persistent use will discolor the conjunctiva, a complication which must be guarded against.

In many cases injections will remove the trouble, but where they fail, probing is in order. The introduction of a probe is a delicate operation and should only be done where there is stricture. Too small a probe should not be began with, as a small sound causes a fold of mucous lining to rise up before it. A few drops of a 4 to 5 per cent solution of cocaine should first be instilled in the sac, then a No. 3 or 4 Bowman probe employed until a No. 13 or 14 Theobald probe is reached, when usually free drainage is established. If the upper end of the probe stands away from the brow, a false passage has been followed. In position the probe lays with the leaf against the inner end of the brow and directed downwards, outwards and slightly backwards. In a very prominent brow a curved probe would have to be employed. The lower end of the probe may be felt in the nose, but not always, as when the opening is on the outer wall of the inferior meatus. Probing should be done about every third day and high numbers reached after a few sittings. Stricture occurs most frequently at the junction of the sac and the nasal duct, but may occur also at the nasal end of the duct, and to this place the Chicago school tells us all our efforts should be directed. snaring off the anterior end of the inferior turbinate, and cauterizing the same. If a small probe can be passed, there is hope of relief by dilatation. After dilating with probes, injections should not be used immediately, because of intense pain from infiltration, due to minute lacerations.

Where there is a tendency to closure of the duct, after probing, styles may be worn. These are of two kinds, hollow and solid. They are not so much used now as formerly. Frequent syringing through them is helpful. They require watching, as there is a tendency for the head or horizontal portion to sink out of sight.

Another method of treating affections of the lacrimal sac is by electrolysis. This method also is now little used. The negative electrode of a galvanic current is connected with the probe and passed into the duct, while a moist sponge connected with the positive pole is pressed on the patient's cheek. Finally, in cases of osseous stricture, which in spite of the measures mentioned, do not yield, excision of the sac is indicated. This is not an easy operation to perform. The sac lies deep and the area is very vascular. An anesthetic is best given and the sac well syringed before operation. An incision is made commencing about one-eighth of an inch below the tendo oculi and extending downwards, dividing the skin, subcutaneous tissue and part of palpebral ligament. The angular vein is avoided and drawn to the inner side and the nasal wall of the sac is carefully dissected out with scalpel and scissors. The dome or upper end of the sac should next be freed, and finally the posterior and outer wall. The mass should then be drawn downward and separated at its lower end from its connections with the nasal duct. The wound is deep and should be kept open by retractors. The cavity left by the removal of the sac is thoroughly scraped, irrigated, and the lips of the wound approximated by horse-hair sutures. Gauze and bandage, with some pressure complete the operation.

# ABSTRACTS FROM ENGLISH OPHTHALMIC LITERATURE.

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### The Differentiation of the Diphtheria Bacillus From Organisms Morphologically Similar.

FISHER, CARL, Boston, Mass. (*Transactions American Ophthalmological Society*, 1909, and *Archives of Ophthalmology*, November, 1909), says that although diphtheria-like bacilli are frequently found in the conjunctival sac, the true diphtheria bacillus is comparatively rare. Many cases thought to be diphtheritic have proved to be not so, and many cultures which have been considered to contain the true diphtheria bacillus have in reality only held bacilli resembling the true form or some related species. There has been much confusion, both among observers and writers, as to the relation between the true diphtheria bacillus and forms similar or closely related. The morphology of this bacillus is most variable. Its important constant features are the acid fermentation of glucose, the failure to ferment saccharose, virulence to the guinea-pig, and the elaboration of specific toxin. These reactions with glucose and saccharose, however, are not distinctive of the virulent bacillus diphtheriæ, since they are also given by certain non-pathogenic organisms having the same morphology. Most often the contaminating organisms are harmless saphrophytes or yeasts, combined with streptococci or staphylococci, which render the fermentation test valueless, but do not affect the test for virulence, because the guinea-pig is remarkably resistant to moderate doses of them. A virulent strain rarely fails to kill in forty-eight hours, although four days is usually given as the longest period within which it may fail to kill. In a series of 38 consecutive cases, five organisms were found which gave the same reactions as true diphtheria, or, in a series of 13 unselected specimens of dextrin-fermenting bacilli, over one-third were not virulent. Animal inoculation is, at present, the only reliable practicable method of identifying the diphtheria bacillus, which test does not consume as much time, while it gives more valuable information. To exclude virulent diphtherioids, the guinea-pig used as the check must be immunized with the diphtheria antitoxin. In practice, on account of the necessity of early treatment, the diagnosis of diphtheria should be based chiefly upon the clinical appearance and symptoms. Importance should be given to the microscopic examination only when it is negative. An erroneous early positive diagnosis of diphtheria is unavoidable in a large number of cases. To avoid unjustifiable quarantine and as a guide to subsequent treatment, animal inoculation should be carried out in all cases in which the diagnosis of diphtheria is made. A. F. A.

### Canthoplasty, Lowering External Canthus.

Worstell, Gaylord, Belle Plaine, Iowa (*Ophthalmic Record*, October, 1909), performed the following operation at the request of a young woman whose eyes did not suit her because they were too small and slanting, being otherwise normal:

After securing local anæsthesia of the conjunctival sac and infiltrating the skin and other tissues in the field of operation, a canthotomy was first made from the external canthus to a point close to the nasal angle. The incision was made with a curved scissors, with the curve upward. A second incision was made with a straight scissors, beginning at the nasal angle and extending to a point indicated in the illustration that accompanied the article. A third incision divided the skin between the first and second, which completed a triangle, and a wedge-shaped piece of skin was removed. Three fine silk sutures were then inserted. The first was passed from outside through the apex of the flap of the outer end of the lower lid, and from within out through the free margin of the conjunctiva opposite the new canthus, outward through the skin at the new canthus and tied. This stretched out the lower ciliary margin and brought it snugly into the new canthus. The external canthus was thus lowered and the palpebral opening enlarged. The second suture united the conjunctiva and skin at the outer end of the upper lid margin, and the third united the skin margins. The operation was very successful. O. W.

### An Instrument for Opening From the Lacrymal Sac Directly to the Nasal Cavity.

Gifford, H., Omaha, Neb. (*Ophthalmic Record*, November, 1909), describes this instrument, which resembles a punch, as a forceps with its cutting blade hollow throughout, so that the cut bone does not clog the opening. He has used it in six cases with satisfactory results. For the operation the nose and inner wall of the sac are cocainized; the upper tear point is first slit down to the sac; another cut made at right angles to the first through the outer wall, so that the punch will enter without risk of injury to the soft parts. Of the ultimate results, the writer is not prepared to give an opinion, as the holes have showed a tendency to close, although the tear point and canaliculus have remained intact; the eyes still water, but he thinks the patient could be taught to use a probe, and even with some epiphora will be as well off as if the tear sac had been extirpated. O. W.

### Congenital Fistula of the Lacrymal Canaliculi.

Carvill, Maud (*Archives of Ophthalmology*, November, 1909), reports a case of congenital fistula of the left upper canaliculus in a woman thirty-six years old. At the inner canthus of the left eye, at the junction of the skin and mucous membrane, on the inner and upper border of the lacrymal caruncle, a round opening, one millimeter in diameter, was seen when the lower lid was retracted at the inner canthus. Fluid injected into the upper and lower normal puncta and into the supernumerary punctum flowed freely into the nose. A probe passed readily through the auxiliary punctum into the nose. There were no indications that it had ever been the seat of an inflammation, and the patient remembered seeing the "little hole in her left eye" since she was a child. H. G. G.

### Pterygium.

Iverson, M., Stoughton, Wis. (*Journal of Ophthalmology and Oto-Laryngology,* August, 1909), frees the pterygium by traction and accelerates the process of denudation with the point of a Graefe knife. It is then pulled outward and dissected loose under its body. Holding the forceps so that the inferior surface of the growth can be seen, he sutures this surface near the cornea. The cone is then cut away above the sutures so as to leave an oval wound, which is closed with a suture. Every trace of conjunctival tissue is curetted away from the cornea. The sutures are removed on the fifth day.

M. L. F.

### A Rapid Method of Staining the Trachoma Bodies of Halberstaedter and Prowazek.

Verhoff, F. H. (*Ophthalmic Record,* October, 1909), describes Wright's modification of Leishman's stain, which is applied in the same manner as in the staining of blood films. The writer found that the specimen was conveniently obtained by scraping the cocainized conjunctiva with the edge of a cover glass, and by making use of the tears as a diluent. The glass may be previously sterilized by passing it through a flame. The tears and scrapings collected on the edge of the cover glass are gently spread over the surface of another cover glass and allowed to dry. The preparation is then flooded with the staining fluid, which is allowed to act for one minute. About eight drops of distilled water are then added, until a slight scum is formed on the surface of the mixture, which is allowed to remain three or four minutes. The staining mixture is then washed off with distilled water, the latter being allowed to act one minute. The preparation is then quickly dried with fine filter paper and mounted in balsam. By this method the diagnosis may be made while the patient waits. By it, also, ordinary bacteria are strongly stained, so as to render infection with them easily recognizable. O. W.

### A Case of Subconjunctival Cysticercus Cellulosæ.

Alling, A. N. (*Archives of Ophthalmology*, November, 1909), describes a spherical cystic tumor, very slightly movable, over the insertion of the internal rectus of the left eye. It was about the size of a pea, and had the appearance of containing a light yellow fluid. The growth had been observed by the patient for about three weeks. The cyst was excised under cocain; it was found adherent to the eyeball and was ruptured in the removal. The gross appearance was that of a cyst containing a straw-colored, slightly gelatinous fluid, and a white mass which proved to be a collapsed bladder worm.

H. G. G.

### Cilium in the Anterior Chamber.

Barr, W. A., Chicago (*Journal of Ophthalmology and Oto-Laryngology*, September, 1909), reports the following case: The patient was a man 60 years of age. Twelve years previously he had been struck with a splinter in his left eye. He suffered but little inconvenience, except impairment of vision, at the time, and the eye remained quiet until two weeks before the consultation, when he struck his head against a beam as he turned quickly to the left. This was followed by a mild iridocyclitis in the injured eye. When seen these conditions were present: The lens was absorbed, leaving a partial posterior synechia. Irido-cyclitis was present. About the center of the cornea was a small leucoma, from the posterior surface of which a cilium extended along the axis of the eye. The bulbous end was in contact with the posterior surface of the cornea, while the point was firmly attached to the remains of the capsule in the center of the pupil. When the head was turned laterally the bulbous end floated freely in the aqueous. An incision was made in the upper quadrant of the cornea and the cilium was removed with iris forceps. The irido-cyclitis promptly subsided and the vision improved. M. L. F.

### A Clinical Contribution to the Question of Permanently Free Communication Between the Anterior and Posterior Chambers.

WINSELMANN, G., Bremerhaven (*American Journal of Ophthalmology,* September, 1909), cites a clinical case which bears directly on the theory of Leber, that the anterior surface of the iris is in no way concerned in the secretion of aqueous humor and that the anterior and posterior chambers are permanently in free communication. It not only tends to make this theory untenable, but supports Hamburger's statement that in a normal condition such free communication does not exist and that the anterior surface of the iris secretes considerable aqueous. On April 30th, 1909, a laborer whose eye had been struck by a piece of steel, about 1 ccm. in size, five hours previously, consulted Winselmann. Aside from a slight swelling and suggillation of the upper lid, nothing wrong could be seen externally at first. The pupil was as large as the left one, reacted well and the aqueous was perfectly clear. The vision was less than 5/60, improved to 5/20 with 1. D. The vision of the left eye was 5/5. After staining with fluorescein a defect in the corneal epithelium was found nasally and upwards.

With the ophthalmoscope a red reflex was obtained temporally, while the center and nasal half of the pupil remained dark. In order to examine the fundus more thoroughly, Winselmann instilled a one per cent. solution of eumydrine and then observed the eye constantly. After 10 minutes the pupil began to dilate on the upper left nasal side. At the same moment a little drop of bloody fluid came forward at the upper nasal pupillary margin and formed a red streak that gradually fell to the bottom of the anterior chamber; soon a second and a third red streak appeared by the side of the first, and after a few minutes they had formed a small hyphæma. About five minutes later the rest of the pupil dilated and soon the whole aqueous was tinged with blood. A quarter of an hour later this had cleared up somewhat and the hyphæma filled about the lower third of the anterior chamber.

This observation bears out and substantiates Hamburger's experiments. The blunt traumatism from which the patient had suffered for five hours previously had caused a hæmorrhage into the vitreous and posterior chamber. The blood was retained in the posterior chamber without causing the faintest trace of stain in the anterior chamber. But, at the moment when the action of the mydriatic began, the blood passed forward from the posterior chamber into the anterior chamber at the place where this action first set in.

The intraocular hæmorrhage had existed previously as was shown by the ophthalmoscopic examination made before the eumydrine was instilled. Moreover, it would be very improbable that at the very moment that the mydriatic was begun, five hours after the injury, a hæmorrhage should have taken place. It was equally improbable that blood had passed into the anterior chamber early and had disappeared, because a hyphæma would not have been absorbed in that short space of time. Hence Winselmann concludes that the anterior chamber was so well secluded from the posterior that no blood could pass through. G. H. W.

### A Case of Interstitial Keratitis Probably Due to Autointoxication.

Williams, Hugh Blake, Chicago (*Journal of Ophthalmology and Oto-Laryngology*, August, 1909), reports the case of a young woman who had an interstitial keratitis, the origin of which was seemingly tubercular, but recovered under treatment for autointoxication. M. L. F.

### Keratoplasty With the Rabbit's Cornea.

Valk, Francis, New York (*Ophthalmic Record*, 1909), reports a case in which lost tissue in the cornea from a large traumatic ulcer was replaced by tissue taken from the cornea of a rabbit. Von Hippel's instrument was used. The operation was performed on a man who had no vision in that eye, owing to complete anterior synechia of the iris to the lower surface of the cornea. The graft lived and remained in situ permanently. O. W.

### Report of a Case of Cyst of the Iris.

Webster, David, and Oatman, Edward L. (*Archives of Ophthalmology,* January, 1910), report a case of a colored man, 48 years old, who said that when 12 years of age his right eye was struck by a stone hurled at him by another boy. The eye immediately became blind, but gave him no trouble until a few months before he presented himself to the writers, when it was found to be inflamed, painful, and constantly growing worse. Nearly filling the nasal half of the anterior chamber was a smooth, translucent tumor, pressing the iris back and apparently attached to a corneal opacity in front of it. The eyeball was enucleated and the pathological report is as follows: One-third of the anterior chamber is occupied by the cyst, formed in the stroma of the iris, and lined with lamellated epithelium. It is intimately attached to the cornea, ciliary body and lens. At one place the cyst wall is imbedded in a large mass of fibrous tissue projecting from the cornea into the anterior chamber. The angle of filtration is obstructed throughout that region occupied by the cyst, the ciliary processes being forced backward by its growth. In the remaining parts of the chamber the angle appears to be open. Descemet's membrane partly covers its outer surface, making a cyst wall composed of hyaline material irregularly covered with endothelial cells, and an internal layer of condensed iris tissue lined with epithelial cells. The epithelium lining the cyst is of corneal or conjunctival origin, and varies from one to four or more layers in thickness. The cells are flattened and atrophic and the protoplasm contains pigment granules. Some parts of the cyst are crossed by fibrous bands. The contents of the cyst are composed of granular material, pigment, epithelial cells and cellular detritus. H. G. G.

### Chorioiditis Dependent Upon Appendicitis.

Morris, Robert T., New York (*New York Medical Journal,* January 1, 1901), reports a curious case in which the patient was cured of chorioiditis, as well as intestinal indigestion and general nervous irritability, by the removal of his appendix. The diagnosis of chorioiditis was made by Kirkendall of Ithaca, N. Y., who believed it to be secondary to toxæmia. Kirkendall's account of the case is as follow:

"On December 2, 1908, the Rev. J. G. C., of Ithaca, N. Y., called to see me relative to his eyes. He gave a history of having been to a local optician for six months who had changed his glasses a number of times, each time with the excuse to the effect that as soon as he got over his nervous trouble his eyes would become used to his glasses and his vision would return. This had been going on during this time without any relief. On the date above mentioned he called to see me and I found his vision with drops:

"R. V. = 10/200; = 20/70 w. + 2.50 + .50 c. ax. 60°.

"L. V. = 10/200; = 20/40 w. + 2.50 + .50 c. ax. 105°.

"Upon examining the fundus of both eyes I found that he was suffering with chorioiditis; in the right eye at the macula there was a marked change; in other words, he had a central choriodlitis. In the left eye it was more diffuse, with the macula slightly distended. Knowing that these cases usually come from toxæmia due to distant causes, I began to question him, and soon ascertained the fact that he had been suffering for two or three years with chronic appendicitis. After the removal of his appendix he made a rapid recovery, and on April 26, 1909, I had the pleasure of re-examining his eyes with drops:

"R. V. = 20/200; = 20/30 w. + 2.75 + .37 c. ax. 60°.

"L. V. = 20/200; = 20/20 w. + 2.75 + .62 c. ax. 105°.

"With the ophthalmoscope I found at the right macula a small chorioidal atrophy, which gave him eccentric vision, causing slight reduction, but the left macula was devoid of atrophic changes, allowing practically normal vision."

M. L. F.

### Changes in the Diameters of the Lenses in a Case of Complete Albinism.

Libby, George F., Denver, Colo. (*Transactions American Ophthalmological Society*, 1909), reports the following case: A girl of three years and eight months presented a low, alternating, convergent squint, lateral nystagmus, constant photophobia, and depreciated vision. Her health was good, her mind bright and active. There was absence of uveal pigment, each iris was very thin, showing only the sphincter and radiating fibers. Through the thinned irides the entire circumference of the lens margin could be plainly seen with the naked eye. The diameters of the pupils under 1-20% eserin were 1.5 mm., in bright light 2 mm., and in a darkened room 4 to 4½ mm. With the accommodation at 40 cm., the transverse diameter of the lens was 9.5 mm., two hours after the instillation of 1-20% eserin it was 9 mm., and two hours after the use of 1% atropin it measured 10 mm. The refractive errors were corrected with a dark amber lens, and the vision continued to improve for a considerable time, while the photophobia largely disappeared.

A. F. A.

### Summary of Results in 115 Cataract Extractions.

THEOBALD, SAMUEL, Baltimore, Md. (*Transactions American Ophthalmological Society*, 1909). This series is in addition to that presented previously and, like that, is not of selected cases. Combined extraction was done in 94 cases, extraction after preliminary iridectomy in 17, simple extraction in 1, extraction in capsule (involuntary) in 2, suction extraction in one case of traumatic cataract. In all of the operations the usual sclerocorneal section was made with a conjunctival flap. The capsule was opened freely by a long cut, crossed by a shorter horizontal one. After operation both the eyes were closed with sterile pads of gauze and cotton, the eye operated on being further protected by Murdoch's shield. The fellow eye was opened on the fourth day and the pad was permanently removed from the eye operated on on the seventh. Beginning on the second day a daily application of one drop of 4% atropin solution was made to the eye operated on. There was loss of vitreous in nine cases, in five of them due to strong contractions of the lids during operation. There was one case of intraocular hæmorrhage due to a violent fit of coughing, with perception of light only remaining. Owing to the effort to make a small iridectomy, several times the pupillary edge of the iris was not excised, resulting in a "buttonhole," which in no case interfered with the success of the operation. Several times the iris, protruding in front of the knife, was cut, but in no case was this followed by a serious result. In one case the iridectomy was done (necessarily) after the delivery of the lens, and, curiously, the result was the best in the series. There were a number of cases of mild iritis, and three in which the iritis was so severe as to require a secondary iridectomy, the ultimate visual results being between 20-100 and 20-200. In fifteen cases discission of a capsular opacity was performed. The total number of successes was 103, partial successes 7, failures 5. The visual acuity, taking the best vision in each, was as follows: Vision = 20-15 one, 20-20 two, 20-25 three, 20-30 fifteen, 20-40 eighteen, 20-45 to 20-100 twenty-nine, 20-120 to 20-200 thirteen. Of the five failures, two were due to infection. The third was worthy of special mention. A cataract had been removed successfully from the right eye three weeks previously, and a successful removal had been accomplished on the left eye when, after a few days, the right eye became injected, and soon a severe and obstinate iridocyclitis was established in both eyes, and vision was hopelessly reduced to perception of light only. A condition closely allied to sympathetic ophthalmitis was established, no doubt owing to the brief period intervening between the two operations. Combining the results in this series with those previously reported, we have a loss from suppuration of slightly less than 2%, and the proportion of successes is a trifle less than 90%. A. F. A.

### Extraction of Cataract in the Capsule.

Lister, Capt. A. E. J. (*Archives of Ophthalmology*, November, 1909), bases his paper on his experience on 576 cases operated on by him, chiefly at the Civil Hospital, Jullunder, where he worked for a year under Major Smith. His general results are as follows: Suppuration occurred in two cases, leading to total loss of the eye. One of these occurred in a case in which he had to introduce a spoon to extract the lens, owing to the appearance of vitreous at the upper edge of the wound during the attempt to extract the lens. Suppuration at the site of the wound occurred in two cases, due, he believes, to infection at the first dressing, as this was left to a compounder. One of these cleared up and caused no after-effects at all. This gives him a percentage of .34 of eyes definitely lost by suppuration. He attributes this low percentage to the use of the 1-2000 perchloride of mercury douche. Although this is a strong solution and causes some pain, he believes it to be a potent factor in preventing suppuration. So favorably impressed is he with this preventive, that there are some cases he would not have operated on had he not learned from observation at Jullunder that it was safe to do so if the douche were used. Slight keratitis occurred in two cases, which yielded readily to treatment. No intraocular hæmorrhage occurred in any of his cases. No case of iritis was seen at all. Escape of vitreous occurred 29 times; the only serious complication due to this loss was the drawing up of the iris, leading to occlusion of the pupil in one case. The writer believes that escape of vitreous in the operation decreases with the experience of the operator and, a point upon which he lays special stress, the experience of his assistant. His technique is exactly that of Major Smith, and he strongly recommends the beginner to men of such experience. He always performs iridectomy. H. G. G.

### The Major Smith Modification of the Modern Cataract Operation —Intracapsular Extraction of the Cataractous Lens.

SATTLER, ROBERT, Cincinnati, Ohio (*Ophthalmic Record,* November, 1909), describes a series of ten cases in which he has performed the Smith operation. The first was for immature cataract in a man aged 52, V=0.1, on whom he had performed a preliminary iridectomy four weeks previously. The lens rotated in response to the pressure movement of the tip of the blunt hook, and the delivery of a large, semi-transparent, rounded lens in its unbroken capsule was easily effected. There was no complaint at any time after the operation; ten days later vision was 0.9, which without apparent cause, declined to 0.8 and remained so. The second was on a woman, aged 72, who had Morgagnian cataract. This was also successfully removed without loss of vitreous; the healing was uneventful and vision 0.7 was restored. The third was a hypermature sclerosed cataract. In this case the lens was delivered in its unbroken capsule, but with considerable loss of the vitreous. There was no reaction or pain, healing was not so rapid and vision was restored to 0.2. The lens was hard, almost black and had flat surfaces with a sharp margin.

In four cases rotation was impossible, and the delivery of the lens in its capsule was effected with loss of the vitreous. In three cases there was no complication and no loss of the vitreous. In a case of immature sclerosed lens, the lens had to be removed with a skeleton spoon; the healing was tardy; there was no irritation; the resultant vision was 0.1.

In summing up, the writer says the Smith operation is adapted especially for the extraction of immature cataract; it is more difficult of execution than other methods and risks the loss of vitreous in every case; it obviates the post-operative complications resulting from opening the capsule and breaking the lens; the principal feature of it is the rotation of the lens, which is rather uncertain in thin, sclerosed lenses. O. W.

### Cyclodialysis.

PYLE, WALTER L., Philadelphia (*American Journal of Surgery,* December, 1909), says that it is impossible to fix distinct indications for cyclodialysis as either an elective or an auxiliary operation. It is of value before an iridectomy, the same as posterior sclerotomy, because it reduces the tension, so it should be considered in primary glaucoma with very high tension, widely dilated pupil and absence of anterior chamber. He considers it indicated when one eye has already been destroyed by glaucoma malignum, or by a severe hæmorrhage subsequent to iridectomy, or when it is undesirable to confine the patient to bed because of extreme nervousness, persistent coughing, great prostration, or old age.

It has also proved of advantage in certain cases of secondary glaucoma, such as: (1) Cases due to anterior synechia when iridectomy will not suffice to reduce the intraocular pressure; (2) Cases of glaucoma following the extraction of cataract, provided, of course, that the edges of the coloboma are in proper place; and (3) When the lens has been dislocated into the vitreous, as in these cases the inevitable escape of the humor during the performance of an iridectomy is a disadvantage, in fact, a positive danger. M. L. F.

### Spontaneous Rupture of the Eyeball.

INGALLS, JAMES W., Brooklyn, N. Y. (*Transactions American Ophthalmological Society,* 1909), reports the following case: Mrs. C. E., aged 89, began to lose vision in the right eye four years before the rupture, and in two years the eye had become blind. The left eye was apparently normal. Nothing unusual had been noticed about the right eye, except that the pupil had become dilated. In all probability the case was one of chronic glaucoma. The pain had been intense for about an hour before the rupture. Afterward the patient suffered from shock, but not from pain. Examination showed that the eye had ruptured and that a confused mass of clots and prolapsed iris protruded from the lower segment of the cornea. The mass was estimated to be from 10 to 12 mm. in diameter. Two weeks later the patient died from diarrhœa. The pathological examination showed that the eye was the seat of an extensive subchorioidal hæmorrhage with total detachment of the chorioid, retina, and ciliary body, with total displacement of the lens and iris. The scleral cavity was filled with a blood clot. There was no sign of any ulceration of the corneal surface at the edge of the perforation.

A. F. A.

### The Treatment of the Infected Globe to Prevent Panophthalmitis.

DAVIS, A. EDWARD, New York (*Transactions American Ophthalmological Society,* 1909), reports four cases of infection of the eyeball, in which he checked the progress of the inflammation and saved the sight in one case by the injection of a solution of argyrol into the anterior chamber. He says that argyrol, in solutions of 2% to 30%, may be safely injected into the anterior chamber, and seems to be of marked value in arresting virulent infective processes therein. A. F. A.

### Sarcoma and Bone Formation in an Atrophic Eye.

Roy, Dunbar, Atlanta, Georgia (*Transactions American Ophthalmological Society*), reports the following case: J. R., age 42, when a child, had a severe inflammation of both eyes, probably a purulent conjunctivitis, which destroyed the sight of the left eye and seriously impaired the sight of the right. About a year ago the left eye became inflamed, accompanied by severe neuralgia of that side of the face. About six months ago the eye began to protrude, until the time of the consultation, when there was a red, hard, conical growth extending about one-eighth of an inch beyond the palpebral fissure. The lids were not adherent to the growth, which filled the anterior portion of the orbit. The diagnosis of sarcoma was made and confirmed microscopically as one of the spindle-cell variety. The orbital cavity was thoroughly exenterated. After the whole had been removed, a globular mass was found imbedded therein, which proved to be the atrophic ball, filled with a sphere of solid bone, that had evidently originated from the chorioid. The sarcoma had started in the eyeball. The wound soon healed, but about three months after the operation the sight of the other eye began to fail. Examination showed the fundus to be normal, except for a decided paleness of the optic disc. Deep in the exenterated cavity, on the outer wall, the bone was rapidly becoming enlarged. From this time the vision failed, until absolute blindness ensued. There was gradual enlargement of the whole temporal region on the left side and progressive mental symptoms. Eight months after the original operation the patient died from general exhaustion. A. F. A.

### Metastatic Carcinoma of the Orbit.

Shumway, Edward A., Philadelphia, Pa. (*Transactions American Ophthalmological Society*, 1909), adds a case of this nature to the four already on record. The patient was a woman of 49, who had noticed disturbance of vision in the right eye for five months, but at that time the fundus appeared to be normal, the corrected vision was 20-20, and no disturbance of motility was manifest. On examination the eye was found to be proptosed 8 mm., and very painful, with no light perception. There was an intense bulbar injection and chemosis, the cornea was ulcerated, and the anterior chamber was one-third filled with yellow-white exudate. A diagnosis of acute panophthalmitis was made, and the eyeball was exenterated. The anterior chamber was filled with pus, but the vitreous was clear, and a nodular mass could be felt in the orbit back of the globe. Further examination showed the growth to be a typical scirrhous carcinoma, with numerous foci scattered throughout the body. Four months later she died of intestinal obstruction. At the autopsy carcinomatous growths were found in most of the internal organs, and when the roof of the orbit was broken through, a hard nodule was found back of the remains of the globe. Examination of the orbital mass showed that at no point did the carcinomatous cells penetrate the nerve fibers, although the cells followed the vessels through the dural sheath and surrounded the pial envelope as a ring, several cells deep. The two recti muscles exhibited marked infiltration of their substance with the carcinoma cells, which, in places, had replaced the muscle bundles. In all such cases the prognosis is bad, and operation is justified only when metastatic growths elsewhere can be excluded, or for the relief of pain. A. F. A.

### Tropometers and Measurements of Arcs of Rotation.

Howe, Lucien, Buffalo, N. Y. (*Transactions American Ophthalmological Society*, 1909). The oldest and in principle the simplest method of measuring the amount of possible rotation of an eye is by means of the perimeter. The inaccuracy of this method depends on the facts that the head is not held firmly in a definite position, that the eye is not always at the center of the arcs upon which the angles of rotation are measured, and that the normal range of rotation is not identical with the extreme rotation under excessive stimulus. These sources of error have been largely eliminated by the later and improved forms of the instruments used for this purpose. The fixed and definite position of the head and eye are secured by placing the teeth firmly on the mouth-bit of Helmholtz.

Special devices also insure that the eye is at the center of the arcs of rotation and remains so throughout the examination. It is not difficult to measure the rotation of the eye outward, but in other directions the brow, nose, or cheek prevent observation of the eye in extreme rotation. To overcome this difficulty a mirror is used, inclined at an angle of 45° to the direction of the axis of the eye when at rest. The position of a ray of light reflected from the eye at rest is observed, and as the eye is rotated the change in the position of the ray of light from the eye in its new position, as reflected on the mirror, determines the amount of rotation of the eye. A graduated arc and telescope render it possible to measure this angle with accuracy. The accurate determination of the amount of rotation of the eye in the different meridians is of much importance in connection with the determination of the choice of operation for muscular insufficiency or squint. A. F. A.

### Improved Apparatus for Localizing Foreign Bodies in the Eyeball by the Roentgen Rays.

SWEET, WILLIAM M., Philadelphia, Pa. (*Archives of Ophthalmology*, November, 1909, and *Transactions American Ophthalmological Society*, 1909). In the new apparatus the planes of shadow of the foreign body are accurately determined by the instrument without the necessity on the part of the operator of taking measurements from the plates or of drawing lines on the chart. The source of light, the indicating ball, and the plate-holder are upon a movable stage and therefore always preserve a known relation to each other, which does not vary. With the apparatus carefully arranged, the resulting plate is placed in the frame containing the key-plate or focal coordinates, from which the exact location of the foreign body may be accurately and almost automatically found. The mechanical features are intended to eliminate some of the errors that may occur in the use of the older instrument through the carelessness or inexperience of the operator. A. F. A.
H. G. G.

### Injuries From Foreign Bodies in the Eye and Examined by Roentgen Rays, With Results of Operation.

SWEET, WILLIAM M., Philadelphia, Pa. (*Transactions American Ophthalmological Society*, 1909), adds another series to those presented in 1901 and in 1906. The large amount of valuable statistical detail may be summarized for the purpose of comparison, as follows: Number of cases 702, injury in the eyelids 3, in the lens 33, in the iris or posterior chamber 9, in the ciliary region 63, near the equator 142, posterior part of the eyeball 106, in the orbit 39, no body shown by the X-rays 307. As to the causes of the injury, 571 were by particles of steel or iron, 49 by copper, brass or other non-magnetic metals, 50 by shot, 32 by glass, stone or coal. As to ultimate result, extraction was not attempted or failed in 56, the extraction was successful but the eyeball was enucleated later in 77, the extraction successful and the eyeballs saved in 178; of these, 72 had vision between 6/12 and 6/60, and 106 had vision from counting fingers to light perception—that is, protective vision only. The causes for which the eyeballs were removed were as follows: Extraction not attempted or failed 56, iridocyclitis 34, panophthalmitis 23, shrunken or lacerated eyeball 14, sympathetic irritation 2, recurring hæmorrhage into anterior chamber 4. Two causes stand out as contributing in a large measure to the loss of eyes injured by penetrating foreign bodies: the period elapsing between the injury and the removal of the body, and the size of the body entering the eye. A few days may suffice for a firm exudate to form around an imbedded body, and even if the extraction is successful the amount of injury that follows the drag of the magnet upon the tissues in disengaging the metal cannot be estimated and is often excessive. Even though the patient is promptly seen and the body is removed at once, a certain proportion of injured eyes will be lost from panophthalmitis or iridocyclitis. Few eyeballs recover from the violent concussion of large pieces of steel. Most of the eyes lost were from the violent concussion of the injury itself, rather than from the traumatism due to the effort at removal of the foreign body. Of the eyes which were enucleated, the entrance wound was in the cornea in 29, at the limbus in 10, and through the sclera in 19. The use of the X-ray is invaluable in determining the location and position of the body, although when the body is in the nasal portion of the lens, and therefore at its greatest distance from the plate, or when the body is so situated that only the edge presents to the plate, the rays fail to secure a shadow of the body. When two or more positions of observation are taken, this difficulty is generally obviated, unless the object is very small. The powerful pull of the large Haab magnet involves much danger of detachment of the retina or of the iris when the body has been in the eye long enough for exudative adhesions to have formed, or where the exact location of the foreign body is not known. The smaller magnet can be more easily controlled, and its manipulation can be more accurate than the large instrument.

A. F. A.

### Injury to the Eyes From Exposure to Intense Light of Short Wave Length.

Miller, W. T., Schenectady (*New York State Journal of Medicine*, December, 1909), says that the ultra-violet rays when intense produce an injury to the eyes which is different from other forms of burns. The power to produce this injury is also possessed by the violet, indigo and blue rays in decreasing rate as we advance into the spectrum from the violet side. The effect produced by these rays is apparently chemical. On the ultra side of the red are longer waves, which cannot be seen, but produce heat. A few moments' exposure to the violet and ultra-violet rays of moderate intensity may produce an inflammation of the eyes, the after-effects of which may last for years. The effects produced by the ultra-violet rays are entirely different from the high-power radiation burns from short circuits and explosions. After the acute symptoms of an ultra-violet burn has disappeared, there remains an inability to fix the eye on an object or a difficulty in doing so, and reading becomes impossible.

Miller believes this symptom to be due to injury to the ciliary body and muscle, rather than to the macula lutea and fovea centralis, as has been generally supposed. He claims that the lens protects the eye much as a glass would, for a glass of moderate thickness is capable of absorbing the ultra-violet rays and of rendering them harmless, while the ultra-violet rays can enter the sclera just outside the lens, directly upon the ciliary body, and can penetrate the sclera as easily as the cornea. If the ciliary body was thus injured the muscle could not focus the object on the retina, and this would account for the blurring of the vision.

The ultra-violet rays cause very little, if any, evidence of external inflammation. The symptoms do not appear at once, but after some hours; while in a burn the symptoms appear immediately. Recovery is slow, often taking months or years, and the eye may remain permanently sensitive to waves of short length.

The symptoms, as they appear, are deep-seated pains in the eyes or back of them, with a difficulty in focusing the eyes upon any given subject. The pain and headache yields slowly to treatment, and for weeks or months the effort of accommodation is not successful. After weeks or months these symptoms gradually improve. Inability to read by artificial light lasts the longest. Complete recovery sometimes takes years, and relapses are liable to occur, especially if light of short-wave length is used, such as the mercury arc, which to normal eyes is harmless.

A chronic form of the disease is met with among those who work with unprotected arcs or wireless telegraphy, the symptoms being occasional headaches, located back of the eyes, which occur with increasing severity and frequency, followed by blurring of the vision, until the patient is obliged to give up the work which exposes him to the ultra-violet rays. Then, if the trouble has not gone too far, recovery will gradually take place.

In concluding, he says that glass is not quite opaque to the long ultra-violet rays nearest to the visible violet, but for the shorter ones even a thin sheet of glass is opaque. For this reason arc lights enclosed in glass globes are harmless.

G. H. W.

### Spectrographic Studies Concerning the Limits of Absorption of Our Protective Glasses.

Hallauer, Otto, Basle (*Archives of Ophthalmology*, January, 1910), presents a careful and scientific study of this subject, with illustrations in the text, and concludes as follows: Schott's Schwerflint of type 0.198 (Vogt), the glass of Gonin, and the exianthus glass fail to give a perfct absorption of the ultra-violet rays. Perfect protection against them is furnished by the euphos glasses and by the writer's gray-green glass, but by both only in certain numbers. These numbers of the euphos are 9, IV, and 6, III, in the greenish shade. The highest absorption limit is for 9, IV, in the 1.3 mm. thickness, at 3969 Angstrom. Of the writer's glasses those that completely arrest the ultra-violet are No. 65 in the thicknesses from 1 to 3 mm. and No. 64 in the thickness of 3 mm. The absorption of No. 65 (1 mm.) reaches 4272 Angstrom. Together with the entire elimination of the ultraviolet with slight loss of light, this glass also suppresses the violet and blue (dazzling) rays of over 4000 Angstrom to the extent of 272 Angstrom. H. G. G.

### The Ocular Symptoms in Pellagra.

WHALEY, E. MIKELL, Columbia, S. C. (*Ophthalmic Record,* November, 1909), presents the results compiled from the examination of thirty-five pellagrins, half of them insane. One peculiarity of the patients was that they allowed the upper lid to droop through fear of light. Nearly all of them were examined in bed. In three cases the dilated pupil was bilateral; in two, unilateral; one of the bilateral cases was myopic. Two cases resisted the action of homatropin for two hours; in four, the resistance was less, and the others reacted in the usual time. Contracted pupils, smaller than normal, hypersensitive to light, was the rule. Shallow anterior chambers were found in thirty-three per cent. of the cases. An obstruction of the lacrymal duct, due to continuity of surface, was evident where the gastro-intestinal symptoms were very pronounced and the inflammation extended to the mouth and postnasal space. Photophobia was present in six cases. Other findings were: paresis of the lids, one; lacrymation, two; dacryocystitis, two; conjunctivitis, two; muddy conjunctivæ, two; jaundiced conjunctiva, three; obstruction of the lacrymal duct, five. Corneal troubles: ulcer, four; superficial inflammation, two; increased sensibility, two; subnormal sensibility, seven. Paresis of the right rectus, one; nystagmus, one. Shallow anterior chamber, twelve; deep, one; serous iritis, one; sluggish reaction to light, six; hypersensitiveness, four; photophobia, six; slow reaction to homatropin, four; prompt, one; spastic reaction to light, two. Unilaterally dilated pupils, two; bilaterally contracted, three; bilaterally dilated, three. Argyll Robertson, one. Tension, plus bilateral, one; plus unilateral (O. S.), two. Retinitis, two; detached retina, one; optic atrophy, three; optic neuritis, three. Cataract bilateral, three; unilateral, two; cloudy lens, one. Fifteen showed arteriosclerosis, which was of every stage and in both young and old. O. W.

### Tumor of the Pituitary Body.

SHOEMAKER, J. F., St. Louis, Mo. (*American Journal of Ophthalmology,* December, 1909), reports a case of tumor of the pituitary body, with complete optic nerve atrophy. The patient was a young woman, who complained of loss of vision during the past eight months. In January she first noticed that the vision of her right eye was poor and confined to the temporal half of the field. Five months later the vision of her left eye began to fail in the temporal half of the field. She suffered no pain in her eyes, but at times had pain in her right temple. The vision of her right eye was nil, that of her left, fingers at five feet. Her pupils were large; the left responded feebly to light, the right made no response. The media were clear. There was complete atrophy of the right nerve and well-marked atrophy of the left; otherwise the fundi were normal. The field of vision in the left eye was limited to the lower nasal quadrant. A rhinologist found no involvement of the accessory sinuses and a neurologist gave no additional information. A diagnosis was made of a tumor in the region of the optic chiasm and a bad prognosis as regards vision was made. Two weeks later the remaining vision in her left eye was lost and the patient has seen nothing since. Her family physician reported that shortly afterward she began to have severe headache and later became delirious. This condition lasted a week, when, after a rather profuse discharge of pus and blood from the nasopharynx, the patient's mind cleared and her condition improved. Six days later he reported that the discharge had ceased and the patient's condition was getting worse, with symptoms of brain pressure. Several months later Shoemaker saw her in his office, when she reported that she had gradually recovered from the condition described and had been in good health since, except for frequent sharp pains through the temples. She was eating ravenously and sleeping a great deal of the time. There was complete atrophy of both optic nerves. A re-examination by a rhinologist revealed no trouble, past or present, in the accessory sinuses. An X-ray picture of the skull showed an enlarged sella turcica. G. H. W.

### Dilatation of the Pupil Due to Bellflower, "Datura Arborea."

FERNANDEZ, JUAN SANTOS, Havana (*Archives of Ophthalmology*, January, 1910), describes two cases in which dilatation of the pupil was effected by touching the conjunctivæ with the piece of a broken sprout of datura arborea. The physiological action was observed in fifteen minutes.

H. G. G.

# ABSTRACTS FROM ENGLISH OPHTHALMIC LITERATURE.

(GREAT BRITAIN AND THE ENGLISH COLONIES.)

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### Recent Observations on Tumors of the Brain and Their Surgical Treatment.

CUSHING, HARVEY (*Lancet*, January 8, 1910). The statistics presented in the paper are based upon 64 cases of brain tumor operated upon during the last ten months. Having been treated upon similar lines and under like operative conditions, they are as a result more significant than any possible compilation of reported cases subjected to operation at various hands under variable conditions.

Under the heading of clinical manifestations of tumor the author makes a distinction between pressure phenomena due to general increase of cerebral tension, which may occur irrespective of the situation and nature of the lesion and the localizing manifestations themselves, emphasis being laid upon the fact that tumors may exist for years, in the absence of one or both of these groups of symptoms, and may even be an unexpected post-mortem finding.

Only one of the so-called cardinal pressure symptoms, namely, the choked disk, lends itself readily to experimental investigation.

This has shown it to be largely, if not entirely, a mechanical affair, attributable to increased tension of the intracranial fluids.

Recent observations, both experimental and clinical, have served to swing the pendulum back to the original views of von Graefe, Schmidt-Rimpler, and Manz, that the process, after all, is largely a mechanical one. Some arguments in favor of these views may be briefly summarized. 1. It has been possible in the canine to reproduce the early stages of a choked disk by the introduction of a fluid under pressure into the subdural space. This fluid, finding its way into the sheath of Schwalbe, leads to venous stasis and to the characteristic neuro-retinal edema. 2. Provided a choked disk has not progressed to one of the later stages in which there is extensive new tissue formation due to the organization of hemorrhages and exudates, its rapid subsidence can usually be assured by the mere relief from pressure afforded from a decompression operation—a measure which is now daily serving as a means of preserving vision for many of these unfortunates, even though the growth itself remains untouched. It is notable, furthermore, that the swelling subsides more rapidly in the eye homolateral to the decompression, owing to the greater relief from pressure on this side, even though it be the side occupied by the tumor. The routine daily examination with the electric ophthalmoscope of patients after such cranial injuries as basal fractures, has shown that a choked disk in the so-called stage of "optic neuritis," is of frequent occurrence, due, in all probability, to the cerebral edema which follows concussion or contusion. The neuro-retinal swelling in these cases, together with the other existing pressure symptoms, usually subsides promptly after the establishment of a suitable subtemporal opening in the cranium. It may be mentioned, further, that we have evidence in support of Byrom Bramwell's view that "albuminuric retinitis," so-called, may be in a large part dependent upon a similar cerebral edema. It may indeed be difficult or impossible to distinguish this condition from the choked disk of tumor, the latter often showing hemorrhages and exudates exactly comparable to those supposed to typify the changes that accompany nephritis.

In addition to the familiar triad of headache, vomiting and choked disk, with certain other general pressure manifestations of less moment, such as vertigo, dizziness, convulsions, and the like, there occurs in most cases of tumor, a further sign, to which I desire to call particular attention, for it seems to be one of the earliest and most reliable indications of an increase in intracranial pressure.

*Dyschromatopsia.*—In affiliation with Dr. James Bordley, it has been customary with us, in the study of the eyes of these patients, to test the visual acuity and to plot the fields for form and color, in addition to the usual observations upon retina, pupil, movement, and so on. It was an early experience to find the existence in many cases of an inversion, or a tendency towards inversion (interlacing), of the ocular fields, a process which almost invariably affects the blue more than the other colors.

In agreement with Charcot and his school, this condition has been commonly regarded as one of the most characteristic signs of hysteria, and we were inclined to believe at first that in our patients it was merely an evidence of some functional disturbance superimposed on the organic lesion, the presence of which we were often able to demonstrate. However, as we began to see the tumor cases at an earlier and earlier stage, the majority of the patients betraying no neurotic tendency whatsoever, we came to regard the dyschromatopsia as definitely characteristic of the pressure of tumor—so characteristic, indeed, that we have become somewhat skeptical of the diagnosis "hysteria," when based upon these long-recognized alterations in the color fields, particularly in view of the fact that a large percentage of our patients ultimately showing a typical brain tumor symptom-complex have at one time or another, in the course of their disease, been considered hysterical.

The dyschromatopsia, it may be added, bears no apparent relation in these cases to the degree of choked disk, and in a number of instances the characteristic distortion of the color fields has actually been demonstrated before the ophthalmoscope disclosed the presence of the expected neuro-retinal changes. We have, indeed, come to place so much confidence in this phenomenon as an early indication of increased intracranial tension, that in a few cases we have ventured to operate at a stage before choked disk has occurred, and, in two instances at least, the successful extirpation of a small tumor at an early date has been due to our growing faith in the reliability of this sign.

The probable relation of these alterations in the color fields to intracranial tension is indicated by rapid return to the normal configuration of their boundaries after relief from pressure has been afforded by the usual palliative operation. It seems to be a more delicate gauge of tension even than choked disk.

Varying grades of dyschromatopsia may be associated with or may precede an accompanying contraction of the field for form. Thus, as is often the case with other of the signs of general pressure, these color changes may possess at times a certain localizing value. For example, with an intact form field, we have observed in a number of instances a half loss of the color fields (hemiachromatopsia), which foretold a subsequent total hemianopsia. But even in these cases, more or less complete inversion has been present in the half fields of retained color vision.

We have endeavored to eliminate every source of error in making these observations, and should they be corroborated by others the phenomenon may prove valuable as an early sign of tumor, for if we are to look forward to more frequent operations upon these cases, the earlier, within reason, they are undertaken, the greater will be the likelihood of their successful termination, either as palliative or radical measures.

The pathological anatomy of tumors is then taken up, followed by operative methods and results. N. M. B.

### Graphic Records of Nystagmus.

Buys, E., and Coppez, H. (*Ophthalmoscope,* December, 1909). A new instrument for the graphic recording of the different varieties of nystagmus has been devised by the authors and called "the nystagmograph." Nystagmus is classified and some of their findings given. Photographs of a series of their tracings are shown, illustrating the normal nystagmus obtained by successively turning the head to the left and right, together with several cases of other forms of nystagmus.

The instrument devised by one of the writers (Buys) allows tracings to be taken in any position. It consists of a "statif" monocular or binocular, according as we wish to register the movements of one eye or of both eyes simultaneously. The "statif" bears a cupule, of shape and capacity according to the case. There is an oval cupule which measures 10 mm. by 14 mm. and two circular cupules of 10 mm. and of 14 mm. diameter, respectively. The cupule, closed by a fine membrane of gold-beater's skin, is articulated upon a mobile arm. It may thus be displaced horizontally or obliquely in such a way as to be applied at will to all parts of the eyeball.

The relations between the globe and the membrane may be regulated to a nicety by means of a couple of pressure-screws. The apparatus is fastened to the head by an elastic band. The cupule is connected with a writing apparatus, provided with one or two stylets, according to the case, by means of a caoutchouc tube.

Cases of both vestibular and ocular nystagmus are illustrated and described. Nystagmus is defined as short and jerky movements of the eyes, which are repeated very rapidly and always in the same direction (Fuchs).

Nystagmus is divided into two chief varieties, "Undulatory" or "Pendulatory Nystagmus," in which the movements of going and coming are identical, and "Rhythmic Nystagmus" or "Nystagmus a ressort," in which the movements are of different rapidities.

The authors disagree with Uhthoff that only undulatory nystagmus is real and the other form a pseudo-nystagmus, nystagmoid jerks depending upon the paresis of the muscles. They believe with Barany that the rhythmic form is a true nystagmus and not exclusively myopathic. Pendulatory nysstagmus is characterized by movements of equal rapidity in both senses, the nystagmus a ressort by movements of unequal rapidity in the two senses. "The essential difference of the two kinds of nystagmus lies in the relative rapidity of the two movements, and not in the position of a point of rest or of fixation in respect to the movements."

Either variety may be subdivided into rectilinear (vertical, horizontal, oblique) and rotary. In cases of unequal movements it should be denominated in accordance with the more rapid movement, and if rotary, after the most rapid phase of movement of the superior extremity of the vertical diameter of the cornea.

Pendulatory nystagmus was found to be especially an optical nystagmus. The voluntary nystagmus, miner's nystagmus, and the nystagmus caused by opening the lids when photophobia is present, or in affections of the conjunctiva are of this form, as also the congenital forms of nystagmus, such as albinism, amblyopia from high hyperopia, and opacities of the transparent media of the eye.

Nystagmus a ressort is met with in the physiological state only in extreme lateral deviation of the eyes. In affections of the vestibule and cerebellum, it is altogether characteristic.

In the vertigo due to stomach or uterus and in acute alcoholism, the nystagmus probably depends upon the vestibule (Barany). It is found equally in some cases of congenital amblyopia.

The two varieties of nystagmus may occur in affections of the central nervous system. The pendulatory form has now and then been found in tabes. One of the essential symptoms of Freidrich's hereditary ataxy is "nystagmus a ressort." In insular sclerosis the two forms may be met with. Lastly, "nystagmus a ressort" may be noted in all processes, the effect of which is to reduce the capacity of the posterior cerebral fossa.

The nystagmograph is presented as a really good method by which the different modalities of nystagmus may be analyzed and a precise classification of the affection established.

W. R. P.

### Some Cases Demonstrating the Existence of the Filtering Cicatrix.

Elliot, R. H. (*Ophthalmoscope*, December, 1909). The author reports four cases in each of which a filtering cicatrix had accidentally been obtained following iridectomy, with resulting lowering of the intraocular tension.

The cases selected appear to be iris-free and were seen eighty-six days to ten years after the operation. The cases were operated by four different suregons, and in only one is there any inference that a filtering cicatrix was aimed at. The writer believes with Herbert and Lagrange that if a permanent filtration can be obtained at times accidentally, there should be little difficulty in obtaining it regularly, if we first study the condition necessary to secure the filtering cicatrix. All four cases show an elevated swelling immediately above the limbus, not over 1 mm. in depth and of varying length and breadth. In three cases minute dark spots could be seen, which were evidently fistulous openings. The blade of a spud or probe could be buried in the edema of the infiltrated conjunctival patches, and the resulting pits would last for some time. In each case the edema would become more marked upon massage of the eyeball, and the tension of the eye distinctly lowered. W. R. P.

### A Preliminary Note on a New Operative Procedure for the Establishment of a Filtering Cicatrix in the Treatment of Glaucoma.

Elliot, R. H. (*Ophthalmoscope,* December, 1909). The author's operation for the establishment of a filtering cicatrix in glaucoma is described in a preliminary paper, the conclusion being drawn from fifty cases operated upon during the last four months. The assumption is made that Herbert and Lagrange have established their contention that it is possible to form a permanent filtering cicatrix between the anterior chamber and the sub-conjunctival space which will permanently reduce a raised intraocular pressure.

A large triangular conjunctival flap is dissected up from above or below the cornea in the vertical meridian, the attached base lying at the corneo-scleral margin. The flap is dissected right to the margin and turned back over the cornea, the sclerotic scraped to prevent the conjunctival tissue catching in the trephine. A small disk of sclerotic tissue is now removed close to the corneal margin by means of a corneal trephine. The disk may be left "in situ," cut out with the trephine completely, or the removal may be completed with fine scissors and forceps. When the anterior chamber is reached the aqueous wells up, and a peculiar, characteristic sucking feeling is noticed by the operator. The trephine used had a diameter of 2 mm. The iris may not present and then iridectomy may be omitted. Iridectomy was performed in twenty-one of fifty cases, only a tiny buttonhole of iris being removed. In two cases it was necessary to reopen later to remove a bulging iris, which did not present at the time of operation. In two other cases there was slight displacement of the pupil toward the trephine hole; in the other forty-six the pupil remained central. Eserine was instilled after each operation. The anterior chamber had reformed on the day following operation in thirty-seven cases; on next day in five cases; and from the fourth to twelfth day in the remaining eight cases. "In no case has the operation failed to relieve tension." No septic accidents occurred in the fifty cases. The one danger is that of making the trephine hole too far from the limbus and tapping the suprachorioidal space instead of the anterior chamber, in which case the anterior chamber is not emptied, the tension is not well lowered, and if an effort is made to excise the bulging sclerotic, a loss of vitreous will occur. This happened in three of the fifty cases.

The author is convinced that the operation is founded on sound principles, and the technique is within the reach of all.

W. R. P.

### The Recognition and Measurement of Low Degrees of Nystagmus.

JACKSON, E. (*Ophth. Rev.*, January, 1910), describes a method of observing nystagmus which consists in noting the character of the movements executed by definite structures in the ocular fundus as seen in the erect ophthalmoscopic image. Withdrawing the observer's eye until the optic disk appears to occupy the whole of the pupil one observes the apparent extent of the movements, whether a given vessel appears to pass entirely across the width of the pupil with each excursion of the eyeball, or only one-half or one-fourth of that distance. From this, by brief calculations, or from the tables given, the real extent of lateral or vertical movement is to be deduced. Perhaps it is not necessary that all cases of nystagmus shall have the extent of movement exactly measured. Yet this can properly be required for cases reported to take their place in the literature of the subject; and it will be found very satisfactory, in attempting to judge by the extent of the movements as to the progress of any case under treatment.

N. M. B.

### Intraocular Injection and Irrigation in the Treatment of Unripe Cataract.

KILLIAN, WM. MARCUS (*Ophth. Rev.*, December, 1909). "The principle of irrigation is the possibility of converting at the time of operation a surgically unripe into a practically ripe cataract. The essentials of the operation are that the solution (4 grains of common salt in each ounce of distilled water) should be absolutely sterile, and of about blood-heat, that a high pressure be not used, that the integrity of the vitreous be preserved, and that the cases be suitable ones for this method. The cases likely to benefit are those chiefly of incomplete cortical cataract at any age after the formation of a nucleus, especially where a shallow anterior chamber shows cortical swelling. The cases where it is frequently unnecessary are pure nuclear cataracts, such as the amber and dark-brown varieties, where we suspect sclerosis of the cortex, even if this is still clear to some extent, from observing a deep anterior chamber. Occasionally in incomplete nuclear cataract one meets a troublesome cortex which will benefit by irrigation."

The apparatus consists of a flat-bottomed Florentine flask fitted up like an ordinary laboratory wash bottle, the pressure being obtained with an India rubber bellows, the air passing through sterile cotton contained in a bulb. Rubber tubing is attached to the nozzle of the flask, and to this are attached the needles and pipettes for irrigating.

The procedure is divided into two stages, either or both of which may be used, as the case indicates. A very perfect light must be concentrated on the cornea. After the usual sclero-corneal section and iridectomy, and before capsulotomy, the irrigating needle is introduced through the wound and made to penetrate superficially the capsule. If the cortex be soft the needle enters readily and the solution diffuses itself under and near the capsule. Transparent cortex is rendered opaque and striated flaky or mother-of-pearl substance is rapidly broken up and separated from the capsule. In soft cases the needle may be made to move about quickly, and thus assist the action of the fluid. The needle should penetrate the capsule about half-way between the corneal section and the center of the pupil, so as to avoid penetration of the edge of the lens or of the zonule. It must be kept well in front of the nucleus. The use of the irrigating needle gives us a valuable indication of the consistence of the lens. If it do not penetrate the capsule readily, but be seen instead to push the whole lens before it, we are here dealing with a sclerosed cataract, and must at once withdraw the instrument lest we dislocate the lens. We know that we shall not require any irrigation to complete the operation in such a case. In some patients the cortex becomes so semi-fluid during injection that a condition very similar to Morgagnian cataract is produced. Section of the capsule is now performed in the usual way and the lens delivered, after which we remove the needle from the India rubber tube and substitute the nozzle. We have now to deal with any residual cortex by massage and further irrigation.

The author thinks that in the hands of an experienced operator who has got over the trial stage of this method the immediate results are probably as good as those obtained by other surgeons of equal operative experience, while patients have earlier relief, with fewer secondary operations. Dr. McKeown's analysis of 154 cases showing only four total failures, 145 successes with vision varying from 20/200 to 20/20, and these all cases of incomplete or unripe cataract, proves what can be done by experience and care in detail. With great care in the sterilization of the apparatus and the solution we ought not to have a larger percentage of cases of infection of the wound than by the older methods.

The author acknowledges that there seems to him to be, "notwithstanding previous remarks, certain grave risks attached to intra-ocular irrigation which must be weighed against the advantages which can undoubtedly be derived from its practice. To my mind, the most serious of these by far is the possibility of injuring the vitreous body, even though it do not show at the time of the operation." N. M. B.

### Some Orbital Complications of Injuries of the Head and Face.

EVANS, J. JAMESON (*Ophthalmoscope*, February, 1910). A series of twenty-eight cases of the various ocular complications following injuries of the face and head is reported.

1. *Atrophy of the Optic Nerve.*—The most frequent complication found was atrophy of the optic nerve, generally of the primary type and showing no sign of a previous neuritis and little or no diminution in the size of the retinal vessels. Twenty-two cases, thirteen of which are included under the

first subdivision, showed this condition. The patients often complained of failure of sight in one eye immediately after the accident, as soon as they recovered consciousness, or after the bandages had been removed. Both eyes may be affected in injuries of the median region of the face and head, but as a rule the lesion and defect of vision are on one and the same side.

Unilateral optic atrophy may result in complete or partial blindness of the affected eye. The partial blindness may take the form of a contraction of the field, which is often most extensive in that part of the field which corresponds to the direction of the blow, i. e., temporal contraction when the force has been applied to the external orbital margin; the upper part of the field diminished when the blow has been from above downwards, which, however, is by no means constant. In a few cases there is a central scotoma, generally associated with some peripheral contraction of the field.

It was noted also that in the great majority of cases of unilateral optic atrophy, there was slight contraction of the field on the other side, although no apparent change in the disk on that side.

II. *Atrophy of the Optic Nerve Associated With Direct Injury of the Orbital Contents.*—Four cases were observed in which hemorrhage into the orbit was largely accountable for the symptoms, proptosis, more or less complete ophthalmoplegia, loss of pupillary reflex, ptosis and, in one case, keratitis, followed by ulceration. These symptoms were of a more or less temporary character, but there remained a permanent and non-progressive atrophy of the optic nerve, whether due to direct injury or to hemorrhage into the sheath or nerve structure the author was unable to determine definitely.

III. *Optic Neuritis.*—Only one case showed optic neuritis following injury to the head. A spurious optic neuritis was noted in two other cases.

IV. *Atrophy of the Optic Nerve Associated With Intraocular Lesions.*—Injury to the outer part of the right eyebrow resulted in paling of the right disk associated with stellate rupture of the chorioid. A similar injury in another case was followed by complete atrophy of the disk, the retinal vessels reduced to threads and the whole fundus dotted with small black spots of retinal pigmentation.

A third case in which the left eyebrow was bruised by a stone, and the cornea and sclera abraided, showed vitreous hemorrhage, ruptured iris and dislocated lens. Three years later the disk showed temporal pallor with contracted field and vision 6/60.

Glaucomatous atrophy of the optic nerve was observed in one patient who had been kicked on the nose by a horse nineteen years ago. R. T. = +1. R. V. = 6/60.

V. *Injuries of Oculomotor and Other Orbital Nerves.*—It is not uncommon to find traumatic atrophy of the optic nerve associated with injury to some of the oculomotor nerves, especially the sixth, and in the case of direct injuries also with lesions of branches of the ophthalmic division of the fifth nerve. One case, however, showed a paresis of the sixth nerve on the left side following injury of the right side of the face. The probability was that the petrous bone had been fractured, thus leading to injury to the abducens nerve, which is in intimate relationship to the apex of that bone. The condition cleared up after four months.

VI. *Injuries to Ocular Muscles.*—In one case the lesion was an indirect one and almost confined to one muscle—the left superior rectus—probably caused by a hemorrhage into the muscle-sheath.

VII. *Some Complex and Delayed Orbital Complications.*—Paralysis of the third (with ptosis), fourth, sixth and seventh cranial nerves resulted in a case of scalp wound. The conditions improved after a fortnight.

A puncture wound from an umbrella rib, of the left lower lid, was followed one month later by pulsating exophthalmos, the eye proptosed, congestion of all the ocular vessels and a marked bruit on auscultation. Five months later the symptoms still persisted, but much less marked.

VIII. *Traumatic Nystagmus.*—Two cases of nystagmus, apparently the result of injury, are added, with the reservation, however, that many objections can be raised to their being purely traumatic in origin.

In conclusion, the author says: "I have said little about the pathogenesis of these various complications of head injuries, my chief object being to present the facts, which I hope will help in establishing some adequate theory or theories of their method of production. It seems to me that the theories of fracture of the foramen, detachment of spicules of bone, and hemorrhage into the optic sheath or nerve are hardly applicable to some of the cases recorded here and elsewhere. It is unfortunate that practically no post-mortem examinations have been made in cases which have been carefully examined clinically, and in the cases which have been examined post-mortem no clinical observations have been made. I trust that in future this deficiency will be rectified by the co-operation of general and ophthalmic surgeons in the investigations of cases of head injury." W. R. P.

### A Study of the Tuberculin Reactions in the Skin and Eye.

McNeil, Chas. (*Brit. Med. Jour.*, November 6, 1909). The author's investigations are based upon 153 cases. The von Pirquet test was done in all, and the conjunctival test (Wolff-Eisner or Calmette) in 78. He uses a slight modification of the von Pirquet method and believes from his results that the reaction is reliable in early conditions. It is less certain in advanced tubercular disease. A positive von Pirquet reaction may be regarded as a certain index of tuberculous disease, whether it is clinically manifest or not. It varies directly with the vigor of the patient and inversely with the amount of tuberculous infection. When the general vigor is only slightly impaired a rapid and intense reaction is obtained. Of the 78 Calmette cases, the von Pirquet test was positive in 31; it was negative in 47. In these 47 negative cases, the Calmette was also negative. It was positive in only 21 of the cases in which von Pirquet was positive, and it failed to react in the remaining 10 cases. That is to say,—out of 78 cases the Calmette either agreed with the von Pirquet or contradicted it negatively. It did not contradict it positively in a single case. It never gave a positive reaction where the von Pirquet was negative. These 10 cases were tuberculous ankle, hip joint, meningitis, spinal disease, peritonitis (2), pleural effusion (3), and chronic broncho-pneumonia. These cases represent a wide range of tuberculous disease, and von Pirquet was positive in all, while Calmette was negative. It may be said that the von Pirquet is superior to the Calmette in point of delicacy over the whole range of tuberculous conditions.

E. S. T.

### Discussion on the Diseases of the Lymphoid Tissue of the Conjunctiva. Opening Paper on Trachoma.

COLLINS, E. TREACHER (*Brit. Med. Jour.*, October 2, 1909). This is a very thorough and exhaustive discussion of trachoma and is divided into a number of heads. The contagious character of the disease is definitely established, and there can be little doubt that the contagious element is some microorganism. The trachoma bodies of Prowazek and Greeff are mentioned, but nothing definite with regard to their importance is stated. The contagion is not transmitted through the air, but in some moist discharge. The adenoid layer of the conjunctiva is the chief seat of the disease. The trachoma organism appears to be a non-pyogenic one, the reaction which is excited by its toxin being an immense new formation of lymphoid tissue, a large increase of the plasma cells, and in the latter stages a formation of fibroblasts. In the treatment there are three ways in which the follicle disappears, and all methods are derived from these principles: first, by rupture of the follicle; second, by intercurrent inflammation and absorption, and, third, by the replacement of the adenoid layer by fibrous tissue, which causes an atrophy of the follicle through cutting off its circulation. Expression is a satisfactory mode of treatment. Galezowski's method of excision of the retrotarsal fold has also given good results. The author has never seen a case which, in his opinion, was severe enough to justify the Kuhnt operation. The methods of cataphoresis, destruction by X-ray, and radium are discussed. The conditions which may produce the non-trachomatous follicle are, first, atropine and eserine irritation; second, the adenoid tendency in children, and, third, muco-purulent ophthalmia.

E. S. T.

### A Case of Sarcoma of the Chorioid.

HINCHELWOOD, JAMES (*Brit. Med Jour.*, October 2, 1909). The case was one of a man of 36. The growth occurred at the posterior pole, below and to the temporal side of the disk. Enucleation was performed after the patient had been under observation for three years, during which time there were no symptoms other than the gradual failure of vision and enlargement of the growth. It was a leucosarcoma.

E. S. T.

### Congenital Blenorrhoea of the Lacrimal Sac.

Foster, John (*Brit. Med. Jour.*, December 11, 1909). This condition, in the author's opinion, has not received the attention it deserves. It is due to catarrh of the mucous membrane of the sac. There are two modes of treatment, one is the frequent emptying of the sac by expression, with injections of zinc chloride; the other is the slitting up of the canaliculus and probing. In two cases reported, the expression was carefully carried out, and the results were excellent. In one, the symptoms all subsided in five months; in the other, in sixteen months. E. S. T.

### A Case of Perforating Wound of the Eye. Operation. Recovery.

Killick, Chas. (*Brit. Med. Jour.*, December 11, 1909). The case was one of a lady who had been struck in the eye by a flying piece of glass in an automobile collision. There was a wound in the outer corneal margin extending across the ciliary region, through the sclera, for about half an inch. There was prolapse of the iris, but no wound of the ciliary body and no prolapse of vitreous. The iris was cut off and the scleral wound covered by a conjunctival flap. The patient made a rapid recovery with normal vision. E. S. T.

### A Case of Lymphangioplasty for Solid Edema.

Mitchell, A. B. (*Brit. Med. Jour.*, November 20, 1909). The case was one of a man of twenty-five in whom edema of the lids had persisted in marked form two years after an attack of erysipelas. Injections of fibrolysin gave no results. Silk threads were introduced into the subcutaneous tissues and carried well down into the cheek, the idea being to establish artificial lymphatics. One set had to be taken out after a short time, but the other has been in for four months, and the edema has improved steadily. Another case is cited where recovery took place. E. S. T.

### The Etiology of Trachoma.

Greeff, Richard (*Brit. Med. Jour.*, October 2, 1909). The author discusses the method of staining trachoma bodies and makes the following points against the contention that trachoma is a disease confined to the epithelium: First, clinically the disease is known to extend deeply; second, in cases where the trachoma bodies are numerous, they disappear on the surface after a few days' treatment, but soon reappear if the treatment is withdrawn, showing that they had been present in the deeper tissues, and, third, the follicles cut in section show the bodies in the epithelial cells, the sub-epithelial tissue, the lymph spaces beneath, as well as in the cells and between the cells of the follicle. It is probable that these bodies are living agents allied to the protozoa. E. S. T.

### The Visual Acuity of School Children.

POLLOCK, W. B. INGLIS (*Brit. Med. Jour.,* October 2, 1909). The author has investigated the statistics of the London County Council schools and finds the percentage much lower than has been stated. The average number of children with defective vision is 10.30 per cent, which figure has been practically the same since 1902. E. S. T.

### The Serum Diagnosis of Syphilis.

FLEMING, ALEXANDER (*Brit. Med. Jour.,* October 2d, 1909). The author gives his method in detail, which is a modification of Wasserman's test. He uses an alcoholic extract of the heart muscle, human, sheep, rabbit, or guinea pig. A positive result can be obtained in almost every syphilitic case.

E. S. T.

### On the Futility of the Official Tests for Color Blindness.

BUTLER, T. HARRISON (*Brit. Med. Jour.,* February 5, 1910). For the past twenty years Edridge-Green has pointed out the utter inadequacy of the official tests, and his efforts have been ably seconded by ophthalmic surgeons both in England and America, and yet the results have been disappointing. Nagel, who was color blind, repeatedly stated that he knew from personal experience how easy it was for any intelligent man to defeat many of the tests. Holmgren's wools are still scheduled as the official test, both by the Board of Trade and by the railway companies, and examinations are practically always conducted by men who have no special knowledge of the physiology and pathology of color blindness. He cites five cases of dangerous color blindness observed by him, one of whom is still a locomotive engineer. Several who could pass a superficial examination with the wools were at once detected with the Edridge-Green lamp, which he considers the best practical test. E. S. T.

### An Interesting Case of Congenital Cataract.

KILLICK, CHAS. (*Brit. Med. Jour.*, February 5, 1910). Miss H., aged 36, came for treatment, having had several unsuccessful operations when a child. The left eye was in an advanced state of phthisis bulbi. The right eye was somewhat shrunken and the tension minus, with the iris drawn up into an old corneal scar. The field was good. An iridotomy was done with de Wecker's scissors, and she recovered enough vision to be able to see large objects. E. S. T.

### The Brain Structures Concerned in Vision and the Visual Field.

CROSS, F. RICHARDSON (*Brit. Med. Jour.*, December 18, 1909). This article, which is really the Bradshaw Lecture before the Royal College of Surgeons of England, is a very careful and detailed description of the anatomy and physiology of the "visual path." A very comprehensive outline of the comparative anatomy is given. It is impossible to give an idea of this article in abstract, but those who consult the original will be well repaid. E. S. T.

### A New Color-Perception Spectrometer.

EDRIDGE-GREEN, F. W. (*Brit. Med. Jour.*, December 18, 1909). This instrument is a spectrometer so arranged as to make it possible to expose to view in the eyepiece the portion of the spectrum between any two desired wave lengths. It consists of the usual part of a prism spectroscope—a collimator with adjustable slit, prism and telescope with eyepiece. In the focal plane of the telescope are two adjustable shutters and a drum head extends from each side, by means of which the wave lengths can be regulated. The entire spectrum is passed before the eye of the observer, who has no clew to the reading of the colors. E. S. T.

### Glare, Its Causes and Effects.

PARSONS, J. HERBERT (*Lancet*, January 22, 1910). "With regard to the effects of glare, they may be roughly divided into two groups—the relatively innocuous and the severe. Mere dazzling, attributable to moderately intense illumination and particularly to widespread diffusion of light over the retina, produces discomfort, which, when prolonged, eventuates in actual pain, The causes of the pain thus experienced have already been considered, and are chiefly due to excessive action of an inadequate protective mechanism.

"Severe results are due for the most part to the intensity of the stimulus, which may be extremely rapid in its action, as for example, in the case of short-circuiting of a powerful electric current. Various grades may be met with in the visual defect resulting from exposure to bright light. A blurred spot or negative after-image may be regarded as physiological when it is relatively transient, but with greater intensity the blurred spot persists and may even be permanent; it is then called a scotoma. With the greatest degrees of intensity the scotoma is associated at a later date with anatomical changes in the retina—pigmentation in the macular region, and so on—a condition seen typically in cases of visual defect after observing eclipses of the sun with unprotected eyes. Prolonged exposure to bright light in the tropics and at sea is not infrequently followed by night blindness. These cases are of peculiar interest, since they show in a marked degree the effects of retinal exhaustion. It was shown long ago that in them if one eye is bandaged and thus protected from light during the day, the night blindness is warded off, as far as the eye is concerned. It is almost certain that the retinal exhaustion in these cases is due primarily to bleaching of the visual purple, which is not restored with the usual rapidity. In some cases of this kind malnutrition plays a part, but others occur without this factor. Night blindness has been known to follow a long motor drive facing the sun, which was near the horizon and consequently shinging directly into the driver's eyes.

"Now, these changes in the retinal purple are chemical in character, and might be expected to be induced most readily by the most actinic rays of the spectrum, viz.: the ultra violet rays. These are known to be responsible for so-called "snow blindness," but this is a superficial inflammation of the mucous membrane covering the eye and is of a completely different character." N. M.B.

### A Case of Sympathetic Irritation Followed by Neuritis a Year After Enucleation; Together With Some Observations on Enlargement of the Blind Spot.

ROWAN, JOHN, AND SUTHERLAND, A. W. M. (*Ophthalmoscope*, January, 1910). Some interesting observations on the blind spot are recorded in a case of sympathetic irritation, with enucleation, subsequently followed by optic neuritis.

The patient, a young girl of sixteen years, was hit in the left eye with a stone eight years ago. Iridectomy was performed six years later, with subsequent headaches and pain. Long ciliary vessels were injected and iris adherent. Right vision = 6/6, and left vision = finger at 1 meter. Ophthalmoscopic examination of O. D. showed disk pinkish, arteries and veins full. Blind spot was spindle-shaped. Condition had been present for at least a year, and left eye was enucleated.

Microscopical section showed cut end of ciliary body adherent to posterior surface of cornea, ciliary body stretched and iris adherent to cornea at corneal scar.

After enucleation right eye quieted down and remained so until one year later, when, following attendance at a cinematograph show, she developed a well-marked optic neuritis. Edges of disk blurred, only the temporal border remaining visible. Vision = 6/18 and Jaeger 12. The condition cleared within one month.

The examination of the blind spot showed at the time of the sympathetic irritation a downward enlargement, which became markedly spindle-shaped as the disease reached its height. The blind spot recovered its normal shape three months after enucleation, only to again assume its spindle shape with the appearance of the neuritis, one year later. It again became normal in shape four months later, following the subsidence of the inflammation.

This case was recorded, as the observations of the blind spot were made regularly and continuously for several months, while the case was carefully observed with the ophthalmoscope; and also for the fact of the attack of neuritis, which followed a year after the enucleation. This latter showed that though everything appeared to have become absolutely normal, there was still a condition of irritability, liable to pass on to marked neuritis, when the eye was exposed to an irritation which in a healthy eye would have had no deleterious effect.

W. R. P.

### A Case of Postdiphtherial Paresis of Accommodation With an Unusual Pupillary Symptom.

Stephenson, Sydney (*Ophthalmoscope,* January, 1910). The author reports a case of postdiphtherial accommodative iridoplegia, occurring in a boy, nine years of age, who had recently recovered from a three weeks' illness with diphtheria treated without anti-toxin.

Examination showed a pronounced nasal intonation, almost complete loss of knee jerks. No incöordination. Ocular movements, including convergence, good. The pupils reacted well and promptly to light, but no near-vision reflex could be obtained. R. V. = 6/60 and No. 14 Jaeger. L. V. = 6/36 and No. 14 Jaeger. Estimated hyperopia 4 D., with + 7 D. = No. 1 Jaeger at 20 cm. A. = 6 D. Fundi normal.

Under treatment with hydrochloride of strychnine and phosphoric acid gradual improvement was followed, and forty-two days later the condition had practically cleared up. R. V. = 6/5 partly. L. V. = 6/6. No. 1 Jaeger could be read at 10 cm., i. e., A. = 14 D.—about normal for a boy of the patient's age.

The writer was able to find but two similar cases in the literature—one by Dr. H. H. Tooth in the *Clinical Journal* of October, 1909, and one reported by Dr. W. Lohmann in the Transaction of the Heidelberg Ophthalmological Society, 1909.

Loss of near-vision reflex, in association with paralysis of convergence, after diphtheria is obviously a somewhat different thing, but it is possible that careful and systematic examination of the reactions of the pupil in cases of postdiphtherial paralysis may show that the rarity of accommodative iridoplegia is more apparent than real. W. R. P.

### A Case of Retrobulbar Neuritis Followed by Dorsal Myelitis.

Cobbledick, A. S. (*Ophthalmoscope,* January, 1910). The case reported is one of retrobulbar neuritis of specific origin, followed later by dorsal myelitis.

The patient, aged thirty-nine years, complained of rapid failure of sight in both eyes. R. V. = fingers at 2 meters. L. V. = nil. Syphilis had been contracted eighteen years previously, which was treated for four months. For the last year has suffered with severe neuralgia of face and head.

Examination: Right eye—The iris reacts to light and accommodation. The disk is pale and presents the usual appearance of a simple atrophy. Left eye—The iris is more widely dilated than the right and is immobile to light and accommodation. The fundus presents a fairly normal appearance, excepting for blurring of the disk at its upper part. There is some hyperesthesia to light and tenderness of both eyes under pressure. The knee jerks are brisk; plantar reflex normal. No Romberg symptom. At this time he exhibited symptoms of lumbar meningitis.

One year later he developed tabes dorsalis. Of interest is that the left eye had now some light perception and both irides reacted to light and accommodation, the left more sluggishly than the right.

Some fifty of this group of cases have been collected and the pathology discussed by Parsons. The primary cause in this case must be attributed to syphilis, but the exact nature of the lesions and the mode of their production is not so clear. The retrobulbar neuritis, probably an interstitial inflammatory condition caused by toxines, produced some swelling of the nerve, which, meeting with bone resistance at the optic canal, caused rapid increase of pressure on the nerve fibres and complete loss of function, followed later by parenchymatous degeneration. The rapid deterioration of sight, followed by sudden failure, would thus be accounted for. Periostitis around the optic canals and endarteritis of small nutrient vessels of the nerve are possible explanations.

Nettleship stated that fifty per cent of symptomatic retrobulbar neuritis are due to syphilis, but it is probable that even a greater percentage are specific, as many of the so-called idiopathic cases will, with the aid of serum diagnosis, come under this head. The causation of the myelitis was probably the sudden loss of blood supply through a syphilitic endarteritis obliterans, rather than an acute softening due to direct toxic poisoning. The preceding spinal meningeal pains no doubt indicated the morbid processes going on, which resulted in myelitis. The other point of interest in this case was the return of iridic contraction to light and accommodation.

W. R. P.

### Two Years' Experience of the Ophthalmia Neonatorum Department of St. Paul's Hospital, Liverpool, With Remarks on Treatment and Results.

Walker, A. Nimmo (*Ophthalmoscope,* February, 1910). A further report is added to that given one year ago of the work being done in the Ophthalmia Neonatorum Department of St. Paul's Hospital, Liverpool.

The department was instituted in January, 1909, with a ward of three beds and cots. Since then it has been enlarged to one four-bed ward, with two adjoining two-bed wards, and a separate dressing room for the out-patients. The number of cases in 1908 was 75, while in 1909 142 cases were brought to the hospital.

The author has been most impressed by three points: First, that the gonococcus is the commonest germ which attacks the newborn child's eyes—71% of the cases at the hospital; secondly, that the gonococcus is practically the only dangerous germ; and, thirdly, early recognition in the prepurulent stage is of paramount importance. Bacterial examination of each case is made at the first visit. Midwives have been encouraged to bring babies on the first day of birth when there is reason to fear infection. If the bacteriological examination is positive, treatment is at once instituted. This method the author believes a more rational form of prophylaxis that the instillation of strong antiseptics in every newborn babe.

The treatment is based on general surgical principles:

1. Free drainage.
2. Frequent and thorough removal of pus.
3. Early operation to anticipate complications.
4. Maintenance of the general resistance of the patient.

Warm, wet dressings, covered by jaconet, are used, and, for irrigation, a sodium bicarbonate lotion, one drachm to the pint, is used by means of a postnasal tube with curved, flattened extremity, attached to a Rotunda douche eighteen inches above. Silver nitrate one per cent, with twenty per cent of glycerine, is used in cases in which the ocular conjunctiva is not congested and the cornea is clear; otherwise twenty per cent argyrol is substituted. If the cornea becomes hazy, eserine is instilled, and if a zone of inflammation begins to show at its margin, kerotomy is performed. A case is cited in which kerotomy was performed upon a deeply-ulcerated cornea with good result.

The importance of breast-feeding is emphasized. The artificially-fed infants seem to have no power of resistance; the ulcers, once formed, tend to spread rapidly and heal slowly. Four of the eleven blind cases were bottle-fed. In no case has the mother been injured by removal to the hospital.

A fully qualified nurse visits all cases reported and arranges for their treatment and removal to the hospital by ambulance. It has been made compulsory by law for the Liverpool midwives to report all suspected cases. Of 217 cases treated at the hospital 11 are totally blind, two of which were beyond the age of ophthalmia neonatorum. Of these all but one were hopeless when brought to the hospital. Besides these, eight more have both eyes damaged, but are not totally blind, and 16 have suffered injury to one eye. The results of 1909 were a marked improvement over those of 1908, chiefly due to the fact that cases are sent much earlier than formerly, some of which are slight or only suspected cases.

| Year | Cases. | Both eyes saved. | One eye saved. | Both eyes blind. | No record. |
|---|---|---|---|---|---|
| 1908 ....... | 75 | 57 | 8 | 6 | 4 |
| 1909 ....... | 142 | 120 | 14 | 3 | 5 |
| | 217 | 177 | 22 | 9 | 9 |

The writer emphasizes the difficulty of home treatment, even by doctor and nurse. "The impossibility of frequent skilled attention, especially at night, makes home treatment full of danger, and the consequences of failure are so disastrous that it is a question whether, when special hospital facilities are available, it is justifiable to run the risks of treatment in the houses of the poor.

"I feel that it is impossible to over-emphasize the grave responsibility which rests upon anyone who undertakes the management of a case of ophthalmia neonatorum. A few days of inefficient treatment means permanent and irretrievable blindness for the unfortunate patient." W. R. P.

### A Simple Ophthalmoscope.

SMITH, PRIESTLY (*Ophth. Rev.*, February, 1910). This ophthalmoscope, though very simple in form, is to some extent new in principle. The body or handle is a flat strip of black celluloid, this material being used because it is tough and not brittle. It carries two mirrors, one *plane*, the other *condensing*, though not concave. A white concave disk inserted in the handle near to the condensing mirror distinguishes it from the other at a glance, or by touch when the instrument is in the hand. Behind each mirror is a socket in which any lens from the ordinary trial case, up to about + or — 10.D., can be placed. The instrument is intended chiefly for the shadow test, for examination of the media, and for the indirect method of examining the fundus. In the consulting room, where the trial case is at hand, it answers well for the direct method also. Elsewhere, at the bedside for example, it must be supplemented by a few trial lenses if it is to be used for this latter purpose.

The chief novelty of the instrument lies in the construction of the mirrors, which, though not perforated, are free from a disadvantage hitherto inseparable from the non-perforated form.

The back of each mirror is protected by cementing upon it with Canadian balsam a disk of glass of the same diameter as the mirror itself, so that the combination forms practically a solid glass disk having a reflecting film of silver embedded in it like a fly in amber.

If an ordinary bi-convex lens be placed immediately in front of a plane mirror, light reaching the mirror through the lens will be reflected as from a concave mirror, and the power of this compound reflector will be double that of the lens, for the light passes through the lens twice. Applying this principle for the purpose of an ophthalmoscope, we take a plano-convex lens 2 D. (50 cm. focus), silver the plane surface, blacken the free surface of the silver, remove the coating from a small central area, and cement a flat disk of glass upon it. This gives a condensing mirror of 25 cm. focal length, and when it is used as an ophthalmoscope the observer has a lens of + 2.D. before his eye. The solid combination has an advantage over a perforated concave mirror of equal strength with a supplementary convex lens behind it. In either case there is one thickness of glass before the eye, but the new mirror has no tunnel, is practically unbreakable, and can be wiped as easily as a trial lens. For the presbyope who habitually needs a convex lens behind his mirror for the indirect method, such a permanent combination is very convenient.

The condensing mirror can be made of any desired focal length by using a plano-convex lens of twice that focal length. The effect of this lens in relation to the observer's eye can be neutralized, or it can be increased or diminished to any desired extent, by substituting for the flat protecting glass a suitable plano-convex or plano-concave lens. If the observer be ametropic and desire to have a correction of his refraction embodied in the instrument, this can be effected by using a plano-spherical, a plano-cylindrical, or a toric lens, in the same way, though where the two eyes are unequal and both eyes are used in ophthalmoscopic work the same instrument would not be suitable for both.

N. M. B.

# ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE.

BY

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### An Attempt to Explain a Form of Personal Subjective Light Perceptions.

Pichler, A., Klagenfurt (*Zeitschrift für Augenheilkunde*, October, 1909, Band XXII, Heft 4). For several years Pichler had noticed subjective perceptions of colored light when he placed his hand over his eyes with the eyelids closed, while reclining in a non-darkened room. This phenomenon was greatly increased after partaking of a heavy meal. It consisted of a large circular violet bright spot in the center of a dark ground. The edges of the colored spot gradually assumed a yellowish green color, which displaced the violet bluish purple center; the periphery remaining of a violet tint. This play of colors continued in a regular manner, seemingly synchronous with the breathing. The color changes were distinctly altered by removing the hands from before the eyes and allowing the outer light to mix with the personal perception.

The author believes that this subjective appearance has a strong relationship with that caused by the galvanic current. The irritation caused by pressure, torsion, etc., on the eye does not resemble it in any way, while that produced by the galvanic current is exactly the same. This resemblance induced Pichler to believe that electric currents are the causative factors in auto-subjective light perception. F. K.

### Estimation of Visual Acuity by Artificial Illumination in the Presence of Disturbed Light Sense and in Myopia.

HILLEMANNS, Freiburg (*Klin. Monatsbl. f. Augenheilk.*, November, 1909), has satisfied himself that the advantages of artificial illumination of testcards is more than offset by its disadvantages, some of which are that it frequently deceives as to the efficiency of an eye under natural conditions and makes it difficult to estimate disturbances of adaptation, especially for the determination of hemeralopia. W. Z.

### Absorption of Short-Wave Light by the Human Lens.

HALLAUER, Basel (*Klin. Monatsbl. f. Augenheilk.*, December, 1909). The experiments of Hallauer lead him to the following conclusion (in abstract): The absorption of short-wave light rays is in general dependent upon the age and constitution and individual conditions (thickness, color, consistence of the lens). The juvenile human lens is from birth adapted for an absorption width beyond 4000 E. A. Besides this wide absorption coefficient there is a distinctly marked incapability to intercept short-wave rays of 3300-3100 A. E. This transmission for such rays remains, on the average, to the second decade of life, and can under debilitating conditions be increased. After the twentieth year there is an increase in the absorptive qualities. With increasing years there is a constant higher value, 4000-4200, which may be reduced by disease. W. Z.

### Experimental Investigations Into the Central Paths of the Pupillary Fibers of the Sympatheticus.

TRENDELENBURG AND BUMBKE, Freiburg (*Klin. Monatsbl. f. Augenheilk.*, November, 1909), summarize their findings as follows: Following unilateral division of the cervical cord and the medulla caudalwards from Budge's center of origin of the cervical sympathetic, there results in the experimented animal, several weeks later, a lasting difference in the size of the pupil; the corresponding pupil is the narrower. After extensive bilateral resection of the sympathetic or resection of its superior cervical ganglion this difference does not appear. On the other hand, the pupillary difference resulting from the first operation subsides if this is done supplementally. The occurrence of this difference in the size of the pupil speaks for an influence upon the iris arising in the cervical sympathetic. The oculomotor and at times the trigeminus were unaffected. Inasmuch as the difference gradually disappeared, it might be thought that an irritative effect was first produced by the section of the sympathetic tract. This conclusion falls, however, because immediately after the section a reversed difference may result. The duration of the phenomenon, as well as the result of electrical cervical irritation, is also against it. The most plausible explanation is that from higher brain centers continuous excitations go out through the medullar and cervical cord to the center of the cervical sympathetic on the same side, which, through unilateral interruption through severance of the tracts of conduction on the one side, causes a contraction of the pupil on the operated side. As to the origin of this stimulation, it may be asserted that the cerebral cortex plays no important part. Certain is it, that after unilateral removal of the cerebral cortex a slight contraction of the pupil of the same side occurred, but of a less degree than that which followed the unilateral division of the cord. It is proven that upon the removal of both hemispheres of the cerebrum in cats, with subsequent unilateral division of the cord at the level of the atlas, a marked difference in the size of the pupils resulted, which could be observed for several weeks. W. Z.

### Adaptive Lengthening of the Eyeball and Aphakic Accommodation in Congenital Luxation of the Lens.

PFALZ, Düsseldorf (*Klin. Monatsbl. f. Augenheilk.*, November, 1909). The following interesting observations were made by Pfalz in a man 24 years of age. Four years previously the patient had had a dislocated calcareous lens removed from his left eye. The eye was quiet, but no study of the fundus was possible, because of opacification of the cornea. In the right eye the shrunken lens was seen in the bottom of the anterior portion of the vitreous. V. = 6/12 with a + 1.5 ⌒ 1.75 c. ax. 180°. Accom. with glasses 3—31 cm., without 25—27 cm. During strong convergence the astigmatism increased 0.35 to 0.4 D. This was not affected by the use of atropin. Stereoscopic tests showed that the limits to be between .5 and 1 cm. for both the 3-point test and the angle test. The fundus was that of a strongly myopic eye—broad, nearly annular, conus with rarefaction of the pigment epithelium.

The author concludes: 1. That in an eye with probably congenital luxation of the lens, the external muscular pressure produced a marked lengthening of the globe that nearly neutralized the aphakic hyperopia. 2. That an accommodative power existed, which was not set aside by the use of atropin. 3. The increase in the astigmatism against the rule during fixation of a near object, together with the lengthening of the globe, points to the fact that through pressure exerted by the external muscles, there was produced a lengthening of the optic axis, whereas in near vision the accommodation in part brought it about .3. As suitable as this adaptation has been in the interest of the future of the eye, it is advisable to recommend glasses for near and far. W. Z.

### Concerning Pathological Color Sensibility Following Surgical Affections.

Hilbert, Lensburg (*Klin. Monatsbl. f. Augenheilk.*, September, 1909), gives the following resume of instances of perverted color perception after surgical affections: Twenty-seven cases of colored vision after head injuries, of which 6 were erythropsia, 10 xanthropsia, 5 kyanopsia, 4 chloropsia, and 2 janthinopsia. It is evident that the warm colors of the spectrum prevail, which corresponds with the fact that red and yellow make a more intense impression in the sensorium than green and blue, and are first recognized by children and play the principal role in the taste of savages. Nothing is known of the pathological anatomy of these pathological color sensations. W. Z.

### Concerning Experiments on the Growing Eye (Preliminary Report.)

Wessely, K., Würzburg (*Muench. med. Woch.*, November 2, 1909). 1. The effect of various tension-lowering operations upon the growth of the eye (iridectomy, iridenkleisis, sclerotomy).

Iridectomies and iridenkleises were performed on rabbits 8 to 14 days old, and the animals kept under observation until maturity (nine months to one year). The size of the eyeball, determined by weighing, was then compared with the fellow non-operated eye. The results showed the eyes subjected to iridectomy without exception 1/15 to 1/30 smaller than the control eyes; and those on which iridenkleisis had been performed 1/15 to 1/30 larger than the fellow unoperated eye. Although posterior sclerotomy produced decided immediate decrease of tension, only slight (1/70) decrease of volume resulted.

Assuming that the growth of the eye is entirely dependent upon intraocular tension, these results indicate that iridectomy tends to effect, even in normal eyes, a slight permanent decrease of tension, iridenkleisis having the opposite effect.

2. The influence of tension of the zonula upon the growth of the lens. (Experimental production of coloboma of the lens.)

Since the ciliary processes in the rabbit extend forward to the posterior surface of the iris, iridectomy removes not only a portion of the iris, but part of the ciliary body and zonula. After such an operation, typical saddle-shaped coloboma of the lens developed, increasing in size with the growth of the eye. The same followed a zonulotomy. Very small zonulotomies, however, resulted in wart-like protrusions of the lens margin, owing to cicatricial contraction of reunited zonula fibers. These results, therefore, favor attributing coloboma of the lens to localized relaxation of the zonula fibers.

3. The extensive regenerative capacity of the developing lens. (Experimental production of central cataracts.)

After discission of young rabbits' lenses and after resorption of the resulting traumatic cataract and even after extraction of the cortical substance, a new, almost transparent, lens was found to have formed several months later. Only the anterior capsule showed a cicatrix corresponding to the point of traumatism, and in the posterior layers there were a few fine opacities. Regeneration occurred from the anterior layers, the opacities being crowded towards the posterior lens portions. Similar results followed cataracts produced by massage.

These experiments tend to throw light on the origin of congenital central cataract.

4. The dependence of the growth of the eye on the growth of the lens. (Experimental production of microphthalmus.)

The regenerated lens never equalled in size the lens it replaced, and the growth of eyeball became proportionately retarded, a true microphthalmus ensuing. Similar results followed the production of massage cataracts, proving that this microphthalmus was dependent upon decreased tension. The size of the globe, therefore, seems dependent upon the size of the lens.

5. The production of maximal glaucomatous (buphthalmus like) enlargement of the growing eye and the effect of iridectomy of the same.

Very thorough discission of the lens in a new-born animal was followed by swelling of even the most peripheral portions, causing the iris root to become attached to the cornea, resulting in closure of the angle, glaucoma and buphthalmus. Later, the anterior chamber becomes deep, except at the periphery. The importance of the angle of the anterior chamber in draining the intraocular fluids is proved conclusively by these experiments, for in the previous experiments, where similar traumatism was inflicted, without, however, encroaching on the region of the angle, no increase of tension followed, and moreover, the eyes became microphthalmic in type. A very narrow iridectomy sufficed to prohibit further enlargement of the globe.

6. The influence of the ocular muscles on the growing eye. Tenotomy of all four recti was followed by slight elongation of the eyeball, and in one case the shadow test showed a myopia of 3 D. Tenotomy of only the superior and inferior recti was followed by a corneal astigmatism of 3 to 3½ D., as compared with ½ to 1 D. in the control eye. Since only a few animals (four) in which tenotomies were performed reached full development, positive conclusions must be withheld. The few results obtained, however, may lead the way in furthering our knowledge concerning anomalies of refraction.

A. C. S.

### Investigations Into the Effect of Operations Upon the Globe on the Germ Contents of the Cul-de-Sac.

JAKAHASHI, Osaka (*Klin. Monatsbl. f. Augenheilk.*, December, 1909). These investigations were conducted at the University Eye Clinic in Vienna. They demonstrate that the effect of a bandage upon an operated eye is quite other than that of a bandage upon an unoperated eye of the same patient. Whereas, in the latter, at the end of 24 hours, there was a more or less pronounced increase in the germs, in the former, at the end of 8 days of bandaging, there was in a few cases, and only in certain forms of bacteria, an appreciable increase in the number of colonies (s. aureus in 5 of 12 cases, s. albus in 16 of 30 cases, xerosis in 8 of 20, proteus in 1). On the contrary, in a considerable number of cases (12:36 s. alb.; 10:21 xerosis) there was no increase, and in some an appreciable decrease. The latter was seen to be the case with the sarzine, pseudodiphtheritic, micrococcus candicans, staphylococcus albus and xerosis, and in the much more virulent s. aureus. He concludes, therefore, that the bandage favorably influences the bacterial content of the conjunctival sac in an operated eye. The reasons for this are that there is increased hyperemia in the vicinity of the wound and an alteration in metabolism, with an increase in the elements harmful to the microorganisms; that the opening and emptying of the anterior chamber is followed by new-formed aqueous, richer in antitoxin, which in the first few days leaks into the cul-de-sac; finally, it has been shown by Lindahl that tears contain an agglutin active against the staphyloccus, and these are increased by the operation and by the warm bandage.

W. Z.

### A Case of Buphthalmus With Congenital Hypertrophy of the Upper Lid.

WEINSTEIN, St. Petersburg (*Klin. Monatb. f. Augenheilk.*, November, 1909). The history of W.'s case was that the patient, a boy aged 16 years, was born with a thickened upper lid on the left side, that there was at first vision in the right eye, but that later the eye became inflamed, painful and blind. Examination showed marked facial asymmetry, great enlargement of the upper lid and of the skin in the temporal region. The lid entirely covered the eyeball and contained a shallow horizontal furrow. It was of doughy consistence, and the skin was of normal color. The eyebrow on this side was much shorter than on the left side. The lower lid, which was completely covered by the upper, was normal. The eyeball was in a state of complete buphthalmus. The microscopic examination of a piece of excised skin of the lid showed the typical picture of a neurofibroma. W. Z.

### Persistent Pupillary Membrane in Twins.

Wiegmann, Hildesheim (*Klin. Monatsbl. f. Augenheilk.*, November, 1909), saw in two well-formed, well-nourished male twins, persistent pupillary membranes of both eyes. Within the pupil there was an almost round ring with a stellate jagged margin connected with the iris by numerous branching lines. The membrane was not attached to the lens capsule. W. Z.

### The Relation of the Fossa of the Lacrimal Gland to the Nose and Its Accessory Sinuses.

Thorsch, Prag (*Klin. Monatsbl. f. Augenheilk.*, November, 1909), examined 82 skulls with a view of determining whether in the operation of Toti (drainage of the lacrimal sac into the nose by resection of the medial wall of the fossa), at times the communication was, not directly into the nose, but into the ethmoidal cells. He found that the lower portion of the medial wall of the fossa lacrimali in most of the cases (about 80%) has no relation to the ethmoid cells, so that in boring through, one comes directly into the nasal cavity. He further determined the relation of the turbinate body, as in case that the opening was covered by it the swelling of the body would defeat the ends of the operation. In 10 instances there was complete covering of the opening by the turbinate and in 13 a partial covering. W. Z.

### Changes in the Shape of the Lens During Accommodation.

Marx, Leiden (*Klin. Monatsbl. f. Augenheilk.*, September, 1909), has modified Tscherning's ophthalmophakometer in such a way that the estimations can be made with comfort and speed and so that high degrees of accommodation can be measured. The results obtained with this instrument uphold what the author terms Maklokoff's law—that the thicker the lens the less it increases in thickness during accommodation, and confirms his views that the increase in the thickness of the lens during accommodation is greater than has heretofore been supposed. He does not consider that these findings invalidate the theory of Tscherning. W. Z.

### Conjunctivitis Vernalis.

BLAAUW, EDMOND, Buffalo (*Zeitschrift f. Augenheilk.*, October, 1909, Band XXII, Heft 4). Fuchs divides spring catarrh into two varieties, palpebral and bulbar. In the tarsal variety there are broad, flattened papillae on the tarsal conjunctiva of a milky color. In the bulbar form, we find nodular growths about the cornea, sometimes encroaching on the latter. A third variety has been observed by the author. The diagnosis is dependent upon two symptoms. 1. After turning the upper lid there is gradually formed a milk-white cloudiness hastened by rubbing the conjunctiva with a glass rod. This cloud can be removed en masse, and consists of a fibrinous film. 2. The fibrin thus removed, when stained with Romonowsky's or Leishman's solution, will show decided eosinophilia.

Eosinophilia is pathognomonic, and, according to Axenfeld, occurs additionally only in pemphigus and infection by trypanosome or by parasites (Miasis). F. K.

### The Present Status of Trachoma Research.

LINDNER, K., Vienna (*Wiener klin. Woch.*, December 16, 1909), first discusses the development of inclusions.

The *development of inclusions as observed in preparations obtained from scrapings.*

Irregular, blue granular masses first appear in the protoplasm of the epithelial cells, and frequently lie scattered in large numbers throughout the plotoplasm. Leber and Herzog sometimes discovered thread-like connections between each pair of ,granules, and compared these forms to protozoan division forms.

In larger inclusions, red trachoma granules (bodies) appear, either in the blue granules or between them.

In still larger inclusions, the blue granules appear as islets only, and when the cell is entirely filled with trachoma granules, they have almost completely disappeared. In small inclusions no trachoma growths are seen, only blue grounds being present.

Relatively large inclusions, however, may occur without trachoma granules, relatively small inclusions with few blue granules scattered amongst the red trachoma bodies, or inclusions of a homogeneous blue may occur, the red granules being embedded in the ground substance. Such forms probably originate from a concretion of blue granules (mulberry forms).

In *sections* in which no color differentiation occurs between red and blue granules, the inclusion presents quite a different picture.

The development of the inclusion proceeds in the following manner. At first round, sharply circumscribed, blue formations the size of a coccus are seen in the protoplasm of the epithelial cell, sometimes double bodies or in masses collected in a hollow of the protoplasm. The individual granules, however, are always sharply defined, and like Gram positive cocci appear in strong contrast to the red background. (Contrast Stain Lindner.) These granules, which he designates initial formations, multiply (division forms) and subsequently exhibit a central bluish clearing, in which very fine granules originate. During the further growth of the inclusion the marginal initial formation gradually clears, the bluish central area progressively increases in size and the granules within proportionately become more numerous. Ultimately the marginal initial formations disappear entirely.

Wolfrum remarked this difference in size in section preparations, attributing the same to better nutrition of the marginal formations.

Still in strip preparations, the trachoma granules in the same inclusion are always of the same size, viz., very small; never do they reach the size of the initial formations. On the other hand, it is undoubtedly true that the late marginal forms are identical with the initial formations, which again correspond to the blue granules (the so-called plastin) in strip preparations. Inasmuch as in the beginning only blue granules are discernible, which ordinarily are entirely unable to conceal the red color of the trachoma bodies, they must be considered mother cells, if we regard the red granules of parasitic origin.

Moreover, in the discharge formations are found in the free state exactly like the initial formations—pale blue round or oval formations, the size of a coccus or larger, with distinct polar staining, on superficial examination liable to be mistaken for a diplococcus. Rarely do division forms occur. The smallest specimens are hardly larger than trachoma granules and generally exhibit a pale center.

Such formations are at times found not only in the inclusions of section preparations (alcohol-sublimate, fixing with contrast or Weidenhein-Eisenhäm stain), but also, though rarely so well demonstrable, in the inclusions of strip preparations. They are found in all preparations obtained from acute trachoma, in so-called inclusion blenorrhœa (acute trachoma of infants), and in monkeys inoculated with inclusion blenorrhœa or directly from the maternal vagina.

He thus considers the so-called plastin a stage in the life history of the causative agent. If the initial formations multiply in the protoplasm a considerable length of time before granules appear, an inclusion rich in plastin results; if the initial formations without multiplying to any extent immediately go over to the second stage, an inclusion with little plastin results.

In sections the inclusions are found in larger numbers; the epithelium is usually lacerated and disarranged, a sign of the marked desquamation.

The author considers it impossible with the staining methods in use at the present time to diagnosticate free trachoma bodies in sections (they are hardly well seen in the inclusions) or even free initial formations, because of their resemblance to other granules. Mast cells, etc.

*Trachomatous Pannus.* No inclusions are found in the corneal epithelium resembling those seen in the conjunctiva; the trachoma bodies lie scattered throughout the cell protoplasm and massed forms are exceedingly scarce. So-called plastin is never present. Double forms occur frequently. The bodies vary in size from visibility to the size of a coccus. In two cases of acute pannus he found the most seriously infected epithelial cells in that uneven corneal zone in advance of the vascularized pannus. Most of the scrapings from the pannus epithelium show spindle-shaped bodies of a pale blue color, or contain granules staining red. The formations may be either intra- or extracellular.

Lindner also finds the trachoma bodies in red blood cells, confirming Leber's observations. He finds them generally in pairs or arranged in a row and always in association with spindle-shaped bodies.

Even before the discovery of the initial formations Lindner was convinced that those bodies were specific for trachoma and represented organized formations. The subsequent finding of initial formations, he thinks, proves positively the parasitic nature of Prowazek's inclusions

After alluding to articles by Heymann, Stargart, Schmeichler. Halberstädter and Prowazek relative to inclusions in cases of ophthalmia neonatorum, Lindner cites his own experiences. Up to the present time he has examined 31 cases of blenorrhœa neonatorum, a term which he applies to all purulent inflammations of the conjunctiva in the newborn. Excluding three chronic cases, negative in every respect, there were found amongst the remaining 28, 13 gono-blenorrhœas. In 12 of these, also in 6 acute and 2 more chronic cases of adult gonorrhœal ophthalmia, no Prowazek's inclusions could be demonstrated.

In one blenorrhœa with gonococci and in the other 15 cases free from gonococci (9 unilateral cases) epithelial inclusions were found which could not be distinguished from those occurring in trachoma, the number of inclusions being proportional to the severity of the disease. Initial formations were numerous, also granules, some of which were free, others contained in pus cells. Excepting the one case of mixed infection. most of the remaining cases were of less severity.

Inclusions could be demonstrated even after two weeks' treatment. The disease set in between the sixth and seventeenth days.

From these findings Lindner concludes that there are some cases of ophthalmia neonatorum (usually the less severe forms) which have no connection with the gonococcus, but in which are found inclusions exactly resembling the inclusions found in acute trachoma of adults.

The findings and clinical similarities between gonorrhœal ophthalmia and acute trachoma make it seem reasonable to suppose that such cases of ophthalmia nonatorum are really cases of acute conjunctival trachoma. A trachoma of the genital tract must, therefore, also be assumed. Experimental inoculations at least have demonstrated that in the vagina a virus may exist which in the newborn causes an inclusion blenorrhœa; in monkeys, however, a disease of the conjunctiva clinically and pathologically the same as true trachoma.

*Contrast Stain.* The cover slips (epithelial scrapings) are dried in the air, fixed in absolute alcohol, and floated (smear surface downwards) for one hour or longer in the following solution:

5 gtts Giemsa (orig. Grübler).
10 cc distilled water.
1 gtt 1% acetic acid.

Then dried, and mounted in cedar oil. The inclusions stain blue, cell nucleus and protoplasm a rose color.

(Sections remain in the above solution 8-12 hours; then immersed in absolute alcohol, xylol and cedar oil.)

Having found inclusions and noted the position of the same (on the movable object carrier), the slips are passed through xylol, absolute alcohol, water into the

*Permanent Stain.*

| | (More beautiful preparation) |
|---|---|
| 5 gtts. Giemsa, | 2 gtts. Giemsa, |
| 10 cc. Aqua destill., | 10-15 cc. Aqua destill., |
| 1 hour. | About 12 hours. |

(Bertarelli.)

Thereupon rinsed in absolute alcohol as long as blue color is given off, dried and mounted in acid-free cedar oil. For sections only the contrast stain can be employed. A. C. S.

### Contribution to the Question of the Etiologic Factor of Trachoma.

WERNER, ERNST, Marburg (*Zeitschrift f. Augenheilkunde*, October, 1909, Band XXII, Heft 4).

Werner made a number of microscopic examinations in cases of fresh non-treated trachoma, treated trachoma and in trachoma with scar tissue, using as a control 25 cases of non-trachomatous conjunctivæ. In this latter class were cases with normal conjunctiva, conjunctivæ affected with acute and chronic catarrh, also follicular and spring catarrh, eczema and tuberculosis. All of the preparations were stained with a modified Giesma stain, as suggested by Greeff. The trachoma bodies were found solely in the trachomatous cases, and were much more numerous in the acute cases and those that had not been previously treated.

The trachoma bodies were of various shapes and were usually in contact with the nucleus in the shape of a close-fitting cap. In old, scarred trachoma cases and conjuctiva not affected with trachoma these bodies were never found.

A description of the differential diagnosis between these trachoma bodies or chlamydozoen, as Prowazek calls them, is hardly possible, but the author believes that any one who has once seen and followed the various stages of the trachoma bodies will never mistake them for anything else. F. K.

### Experimental Transference of Ophthalmic Neonatorum (Free From Gonococci, but with Epithelial Inclusions) to Monkeys.

Lindner, K. (*Wiener klin. Wochenschrift,* 1909, No. 45). At the International Congress in Budapest, 1909, Heymann showed preparations of gonoblenorrhœa of the newborn with epithelial cell inclusions which could not be differentiated from trachoma inclusions. Prowazek and the writer, however, could find these inclusions only in those cases of ophthalmia neonatorum in which no gonococci could be demonstrated. To prove that these cases were allied to trachoma, he selected two cases of ophthalmia neonatorum free from gonococci, but with epithelial cell inclusions, and inoculated three macaque apes and one pavian.

In one macaque ape a mild conjunctivitis was observed at the end of six days, and in the scrapings were found several Prowazek bodies. In the other two monkeys no reaction ensued and no inclusions could be demonstrated.

In the pavian, after an inoculation period of four days, a rather severe purulent conjunctivitis set in, and on the seventh day numerous Prowazek inclusions were found.

These experiments show that it is possible to transfer to monkeys the virus obtained from a case of ophthalmia neonatorum free from gonococci, but containing cell inclusions. Inasmuch as the clinical course of a positive inoculation resembled a trachoma inoculation, the idea suggests itself that such cases of ophthalmia neonatorum are cases of conjunctival trachoma of the newborn. A. C. S.

### On the Cure of Trachomatous Pannus by Inoculations With Gonorrhœal Secretion.

GOLDZIEHER, W., Budapest (*Wiener klin. Woch.,* December 30, 1909). Goldzieher details the histories of three patients with trachomatous pannus (pannus crassus, carnosus), in which he resorted to inoculations with gonorrhœal secretion. Following an inoculation period varying from 3-4 days a violent purulent conjunctivitis usually set in, after the subsidence of which vision was found in every case to be greatly improved.

He thinks the treatment, however, only indicative where the pannus appears as a dense, vascular network, almost entirely concealing the iris, ofttimes distorting the corneal curvature and reducing vision to hand movements. In cases in which it is possible to make out the individual parent stems at the limbus, galvano cauterization is always the operation of choice.

In unilateral cases the question of inoculation must receive more careful consideration and the patient fully informed as to the possible consequences. Still the writer has never observed an infection to follow in the unaffected eye. He protects the eye by covering it with a modified Buller's shield.

The less virulent gonorrhœal secretion should be employed, the secretion obtained from a case of ophthalmia neonatorum being the most suitable. Such inoculations often result in a complete return to normal anatomical conditions without the formation of any scar tissue.

Goldzieher believes the inflammatory reaction causes a destruction of the young, unstable cells of the infiltration tissue. He emphasizes that the method is only to be considered in cases in which vision is practically lost and other remedial agents have failed. The vascular, succulent porous tissue, containing in its vessels protective bodies, is much more resistant than the transparent cornea.

He considers jequiritol in mild cases unreliable and not free from danger, and in extreme cases usually ineffectual.

A. C. S.

### Burn of the Cornea Caused by Blue Stone. Suit for Malpractice.

ZIRM, E., Olmütz (*Wiener klin. Woch.,* December 16, 1909). The patient, a 34-year-old man, afflicted with chronic trachoma, had been under Zirm's care in the hospital for about ten weeks, during which time daily applications of crystallin copper sulphate were made. He was then discharged, and subsequently entrusted with a stick of copper sulphate. He had treated himself for about eight months, when one day, according to the patient's statement, while using the copper stick a piece broke off and remained in his eye, all attempts to remove the same proving ineffectual. No physician, however, was consulted until Zirm saw the patient on the following day, and found an extensive eschar of the upper tarsal and bulbar conjunctiva, including the upper portion of the cornea. The case proved very obstinate to treatment, the final result being a dense corneal opacity, with symblepharon between the upper inner corneal quadrant and the upper lid. Fingers could not be counted.

The patient then brought suit against Zirm. A letter containing the following questions was sent by Zirm to leading ophthalmologists, Fuchs, Uhthoff, Hirschberg, Kuhnt, etc.:

1. Do you permit patients to treat themselves with the copper stick?
2. Have you ever encountered a case of burn of the cornea?
3. Do you consider the possibility of such an accident an event easily foreseen?

No one had ever met with such a complication. Fuchs thought the breaking off of chips during the application a most unusual occurrence, never observed by him, and something that could not be foreseen. Elsching often observed a crumbling of the stick during vigorous application, but never a case of burn resulting therefrom.

Various answers were received to question No. 1, the answers for the most part depending upon the location of the respective ophthalmologists. Zirm thinks clinicians in large cities seldom find it necessary to prescribe copper sulphate in crystal, whereas in the provinces such method of treatment often becomes necessary and in trachomatous families a great boon.

The case was finally settled out of court. A. C. S.

### Hypopyon Keratitis With Unusual Bacterial Findings.

ROSENHAUCH, Cracau (*Klin. Monatsbl. f. Augenheilk.*, September, 1909). In ten of Rosenhauch's cases the pathogenic organism was Petit's bacillus (Diplobacillus liquefaciens

Petit); six occurred in women and four in men. With but two exceptions they occurred at about the fiftieth year. In all cases iritis was present; the exudate in the anterior chamber varied in amount, but in all was gray in color, with here and there a yellowish hue. In the majority of the cases the ulcer was extensive and occupied the fissural portion of the cornea. In two cases the ulcer was of the serpens type. In five cases trauma had occurred. In two dacryocystitis was present. In four cases the infiltration destroyed the tissues down to Descemet's membrane. He concludes that from the clinical appearances it is impossible to decide with certainty as to the etiology of an ulcer. In one case, in which the cause was the staphylococcus aureus sarciniformis, panophthalmitis developed. In one case the organism was an unidentified Gramme-negative bacillus. Morphologically it resembled the Friedlander pneumococcus, the bacillus pyocyaneus and the coli bacillus. It differed from the first in that it gave a marked indol reaction, formed colonies in bullion, liquefied gelatin and evolved no gas in sugar agar. From the second it differed in being thicker and in producing no stain; it did not coagulate milk and evolved no gas on sugar agar. From the third it differed in not coagulating milk, decomposing sugar agar and liquefying gelatin. W. Z.

### Pathological Anatomy of Phlyctenular and Phlyctenular-Like Processes.

SAYASHA, Tokio (*Klin. Monatsbl. f. Augenheilk.*, November, 1909), has made a histological study of preparations from cases of marginal phlyctenular conjunctivitis where there was also a peripheral triangular infiltrate in the corneal tissue. The conjunctival stroma, just beneath the epithelium, showed marked infiltration with lymphocytes and in places polynuclear leucocytes, with here and there greatly congested blood vessels and dilated lymphatics. In the deeper layers there were circumscribed nodular foci with pale staining center, partly homogeneous and partly granular, with nuclear debris. Surrounding this was a zone of granulation tissue, made up principally of lymphoid and a few spindle cells, resembling epithelioid cells; also giant cells. In other words, the picture of a tubercular node, with incipient caseation. Still deeper similar changes were found. The overlying conjunctiva was scantily infiltrated with leucocytes. No microorganisms were discovered. The author attributes these changes to the action of tubercle toxines. W. Z.

### Nodular Keratitis.

Wehrli, Frauenfeld (*Klin. Monatsbl. f. Augenheilk.,* September, 1909), reports a third case of nodular keratitis. The patient, a gardener, aged 28 years, had had good vision until two years previously, when sight began to fail without inflammatory symptoms. He had been treated at Moorfields, where the Calamette test had been made, with a positive reaction. The clinical picture was typical, differing from the author's former cases in that the opacities lay deeper, and, consequently, caused less elevation of the epithelium, and in that they were less irregular and more oval in form. Physical examination gave evidence of "latent active tubercular lung and glandular affection." In several preparations of the subepithelial foci, granular tubercle bacilli were demonstrable by employing the Much stain. The points of interest in the case, confirming the author's previous observations, are that the affection occurs principally between the second and third decades; that it is not congenital, that histologically it consists of a focal, entirely superficial parenchymatous inflammation and is in every way analogous to the changes induced in Schleik's experiments by inoculating the cornea with tubercle bacilli of attenuated virulence. W. Z.

### Keratitis Gonorrhoica Metastatica.

Asher, W., Leipsic (*Zeitschrift f. Augenheilkunde,* November, 1909. Band XXII, Heft 5). The patient, a 19-year-old male, had gonorrheal rheumatism of the knees, associated with metastatic conjunctivitis, followed later by inflammation of the interstitial corneal layers.

Under atropin and heat, the keratitis cleared up. A second attack of gonorrheal metastatic conjunctivitis occurred, the purulent secretion of which was sterile. F. K.

### The Significance of the Wassermann Reaction and Old Tuberculin Injection in the Etiology of Parenchymatous Keratitis.

Kummell, Erlangen (*Klin. Monatsbl. f. Augenheilk.,* December, 1909). The results of Kümmell's studies were that in 11 cases of parenchymatous keratitis, in which syhilis was either the likely or the sure cause, and three in which tuberculosis was suspected on the grounds of the history and the physical examination, the Wassermann reaction was positive in every case. The same was true in nine cases which gave a positive reaction to old tuberculin injections. Which of the reactions is to be given the preference is debatable, but apparently the Wassermann reaction is of the greater importance. W. Z.

### Contribution to the Pathological Anatomy of Scleritis.

Komoto, Tokio (*Klin. Monatsbl. f. Augenheilk.*, December, 1909), gives a histological study of an eye, the seat of a scleritis, which had to be removed because of intense pain. The patient was a woman, 47 years of age. In the upper-inner quadrant of the globe the conjunctiva was congested and swollen. Cornea clear. Iritis with pupillary membrane. Despite treatment, the injection spread around the cornea and the swelling towards the equator, and a palpable tumor formed behind the equator, pushing the eye forwards and upwards. Cornea now hazy.

Microscopic study showed the tumor to be composed of round and oval mononuclear cells, occupying the fissures in the very vascular scleral tissue. The outer layers were most involved. In the most involved portions the scleral fibres could scarcely be traced through the infiltrate. The conjunctiva and orbital fat contained disseminated infiltrate. Vessels were not numerous, no necrotic areas were detected, but in some places the cells stained lightly and were endothelial-like, but there were no giant cells. Posterior to the growth the infiltrate was slight, but could be traced in places to the sheath of the optic nerve. Between the limbus of the cornea and the growth the infiltrate was more diffuse. The conjunctival infiltrate was very marked and dense. The blood vessels and lymph spaces were very numerous, giving the appearance of cavernous angioma. Nodes, resembling trachoma follicles, were found, made up of pale endothelial cells. There were no phagocytes or giant cells. In the corneal layers the infiltrate reached quite a distance into the parenchyma. Descemet's membrane was destroyed only in the vicinity of Schlemm's canal. W. Z.

### Concerning the Employment of Wright's Opsonic Technic in Ophthalmology with Special Reference to Tuberculous Diseases.

Stock, Freiburg (*Klin. Monatsbl. f. Augenheilk.*, November, 1909), concerned himself in his painstaking investigations with the questions: Is it necessary in the therapeutic employment of tuberculin to determine the opsonic index? Are better results thus obtained than by purely clinical observations? Can a conclusion be drawn as to whether a disease of the eye is or is not tuberculous by estimating the opsonic index? From a careful study of eight cases he concludes: That if the opsonic index is estimated during a tuberculin treatment an increase in that index may be noted in many cases under small and few injections. This increase does not prove that the case has been favorably influenced clinically by the tuberculin employed. It was proven that while with these small doses the cure made no progress, larger doses favorably influenced the disease. He is of the same opinion with many other writers that high opsonic index is not significant of cure. It is unnecessary as a control to the employment of tuberculin therapeutically. He injects as high a dose of tuberculin as the patient will bear without manifesting any reaction (pain at the point of injection, rise in temperature or indisposition). He made use of the fact that the opsonic index is influenced by irritation of a tuberculous focus. for diagnostic purpose. He irritated the diseased eye with dionin and found that the index for tuberculosis fluctuated markedly, whereas if the ocular inflammation had another cause it was not materially changed. This observation is clinically interesting and important, as it proves that through irritation of a diseased eye material is disseminated into the body. It is possible that dionin and subconjunctival injections of salt bring about the formation in the body of antibodies. W. Z.

### Concerning the Beginning of Senile Cataract in the Inferior Half of the Lens.

Handmann, M. (*Klin. Monatsbl. f. Augenheilk.*, December, 1909), from a clinico-statistical study of 845 eyes with incipient senile cataract, with observation upon glaucomatous and diabetic cataract, concludes that: 1. That senile cataract begins in the majority of cases (aside from intra- and supranuclear forms) in the inferior half of the lens and especially in the inferior nasal quadrant. 2. In this clinical observation is to be seen a pathologicoanatomical demonstration that senile cataract is the result of a disturbance of nutrition, which operates more upon the inferior half of the eyeball than on the superior. 3. This difference in intensity of nourishment is dependent upon two causes—(a) the pathological product, because of its greater specific gravity, sinks and acts more deleteriously upon the lower than the upper part of the lens. (b) The physiological active light rays, both natural and artificial, affect throughout life more the inferior part of the lens and retina than the superior part, protected as it is by the upper lid. 4. Diabetic and glaucomatous cataract differ in this respect from senile cataract in that they do not particularly affect the lower part of the lens. He considers that the light rays are only a contributing factor as the pathological processes are not affected by light or shade. W. Z.

### Ophthalmologic Experience in the Recent Epidemic of Relapsing Fever With Special Reference to the Etiology.

NATANSON, A. SR., Moscow (*Klin. Monatsbl. f. Augenheilk.*, September, 1909), reports four cases of ocular involvement in this affection. It presented itself in the form of an anterior chorioiditis with the following characteristics:—Vitreous opacities preceded, as a rule, the iridic or iridocyclitic phenomena, sometimes by months. Besides dust-like vitreous opacities and floating specks, now and again large dense blue or bluish-white opaque membranes formed in the anterior part of the vitreous. The course of the disease was benign. In three of the author's cases trauma appeared to be an exciting cause. W. Z.

### Severance of the Optic Nerve From the Globe (Evulsio Nervi Optici).

LIEBRECHT, Hamburg (*Klin. Monatsbl. f. Augenheilk.*, September, 1909), has had the opportunity of determining histologically the effects of a bullet wound of the orbit in which the optic nerve is severed from the globe. The patient had shot himself in the right temple. The corresponding eye was proptosed down and out. The pupil was widely and fixedly dilated. No red glare could be obtained from the fundus.

Section showed that the track of the bullet passed above the optic nerve through the musculatur to the left temple. The section through the eye at the optic nerve entrance showed the absence of the nerve from the scleral hole. The dural sheath was severed flush with the sclerotic. There was massive hemorrhage in and about the eye. The vitreous, chorioid and in part the anterior chamber and likewise the capsule of Tenon were saturated. The muscles were free from blood. The normal position of the nerve in the muscle funnel was occupied by a hemorrhage for a distance of ¾ cm., posterior to the globe. At the location of the ciliary ganglion the hemorrhage occupied the position between the dural sheath and the optic nerve. The blood entered the nerve through a rift in the pial sheath and divided it into two uneven parts. The pial sheath was separated from the larger part, but was intact upon the smaller. The septal tissue in the larger part was torn out and in the smaller part it was collected into thick strands. The tear in the optic nerve was about one cc. in length. The nerve fibers were here destroyed and infiltrated with leucocytes. At the site of the orbital hemorrhage there were splinters of bone the size of a little finger nail, embedded between the nerve and muscle, to the outer side of the nerve. The adipose tissue and the external rectus muscle were lacerated. The forces at work in the destruction were first the fragments of bone, which drove the nerve laterally and backwards; second, the penetrating shot; third, the expansion of the gas and powder driving the eyeball forward. These forces counteracted and tore the nerve loose from the ball.

W. Z.

### Congenital Cyclical Oculomotor Disease with Hippus of the Iris.

FRANKE, Hamburg (*Klin. Monatsbl. f. Augenheilk.*, November, 1909), records two instances of this unusual affection. The first was seen in a male child 3 years of age. Two years previously the parents had noticed that the pupil of the right eye was sometimes large and sometimes small. The attacks were influenced by emotional and physical conditions. Examination showed that the maximum dilatation was 5 to 6 mm., followed rapidly by a contraction to 1½ to 2 mm.; this was followed by a slow dilatation. At times the contraction lasted 10 seconds, at other times 20 seconds. The dilatation was shorter, from 5 to 20 seconds. During this pupillary play a slight ptosis with a complete paralysis of the external oculomotor branch occurred. Stimulation of all kinds seemed to have no effect on the dilated pupil. Contraction could be induced, just as the pupil was about to dilate, by having the child look inwards. Commands to look upwards or downwards were without effect upon the pupil. Otherwise the eye was normal. A second similar case was seen in a girl 16 years old.

W. Z.

### Sclerectoiridectomy.

Meller, Wien (*Klin. Monatsbl. f. Augenheilk.*, December, 1909), discusses the Lagrange operation respecting the technic and results. He states that the desired position of the incision is not always possible of attainment because the conjunctiva is frequently torn by the fixation forceps owing to the senile condition of the membrane. In the performance of this peripheral incision it is not always possible to avoid injury to the root of the iris, especially where there has been a so-called peripheral anterior synechia. This is objectionable because of the danger to the capsule of the lens in doing the subsequent iridectomy, the points of the forceps blade getting behind the iris. He therefore advises the performance of the iridectomy immediately after finishing the section. Another unfavorable complication is prolapse of the vitreous. Eserine should be used before the operation in order to reduce T., as well as to have the pupil contracted at the time of the operation. The performance of the iridectomy is more difficult than ordinarily, because of the distance of the pupillary margin from the wound.

For excision of the piece of sclera he uses an extra strong pair of De Wecker's scissors. Very often this excision cannot be made the full length of the incision.

*Appearance of the Eye After Operation.*—The restoration of the anterior chamber is slower, the flap is more swollen and the eye frequently more irritated than after ordinary iridectomy. In 12 of Meller's cases the appearance of the scar was that of a simple thinning of the sclera; in 8 there was a subconjunctival fistule; in 2 there was an ampulliform edematous elevation of the conjunctiva. He has not found that there is the close relation between the intraocular T. and the character of the scar that Lagrange assumes. As to the *character of* *the resulting scar,* Meller had occasion to operate upon one of the patients subsequently and was surprised to find that the apparently edematous tissue was really very firmly adherent to the underlying structures.

*Results.*—The cases were observed from six to nine months. To summarize, it may be stated that this operation not only reduces intraocular T., but brings it to a lower point than does simple iridectomy. This was shown especially where iridectomy was made on one side and the scierectoiridectomy on the other. The study is based upon 27 cases. W. Z.

### The Operative Treatment of Astigmatism.

Winselmann, G., Bremerhaven (*Zeitschrift. f. Augenheilkunde,* November, 1909, Band XXII, Heft. 5). The patient, a male 16 years of age, had a mixed astigmtaism of 5D, which corrected, gave him a vision of 5/20. The author made an incision in the corneoscleral junction, with retention of the conjunctiva in the center, to prevent prolapse of the iris. The vision in 10 days had increased to 5/10 without any glass, and five months later equalled 5/7 with the aid of a cylinder of 1D.

F. K.

### Clinical and Chemical Studies of the Causes of Symptoms of Intoxication After the Use of Atropin in Children Suffering From Ocular Disease.

Elsner, Hans Heinr., Basel (*Zeitschrift. f. Augenheilkunde,* November, 1909. Band XXII, Heft. 5). In an experience of 20 years, symptoms of atropin poisoning, after the use of atropin drops in the Basel Eye Clinic, had been quite rare, even when large doses were used. It was noticed, however, that recently very small doses in children had caused alarming and intense poisoning. For instance, in a case of congenital cataract, a drop of a half per cent solution of atropin had been used to widen the pupil. Symptoms of intense belladonna poisoning arose. A number of similar cases occurring removed the possibility of an idiosyncrasy.

An examination of the original bottles from which the solutions had been made showed one label to read "atropin, sulphuric alb. crystal natural," the other reading "atropin sulphur alb. puriss. crystal Pr."

The difference between the two salts was that the former (the natural atropin) was a mixture of atropin with various amounts of hyoscyamine, whereas the atropin puriss. was pure atropin.

Examination by the author proved the atropin naturelle to be really almost pure hyoscyamine with very little atropin. To test the poisonous qualities of these two varieties of atropin, Elsner made a number of instillations into children's eyes, observing severe physiologic reaction from the natural atropin and scarcely any from the pure atropin. Experiments with animals gave a similar result, from which he concludes that hyoscyamine is the poisonous element in commercial atropin. Chemically, atropin and hyoscyamine are isomeric and have the same structural formula. They are differentiated by: (1) The optical activity. (2) By the melting point of the drug. There seems to be some difference of opinion among the authorities regarding the exact melting point and optical activity of the drugs.

The author's experiments show that the melting point of atropin is about 185°, hyoscyamine at 205° Cels. The polarization test is very essential in the differentiation of the drugs, hyoscyamine turning at about minus 25, while atropin is nearly neutral.

Hyoscyamine is found in large quantities in the young plants and is inexpensive. Atropin is found in the older plants and in small quantity. It is of extreme importance that the physician can be assured of the fact that the atropin that he prescribes is pure and not made up of mixture of hyoscyamine and atropin.

If hyoscyamine or natural atropin is used, it must be in a much smaller dose. If the latter contain 10 per cent of hyoscyamine, for instance, the dose should be 1/10 of the dose of pure atropin. F. K.

# ABSTRACTS FROM FRENCH OPHTHALMIC LITERATURE.

BY

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### Sympathetic Optic Atrophy.

PECHIN (Atrophie optique sympathique, *Archives d'Ophtalmologie,* 1909, XXIX, p. 687), reports the following cases:

1. Male, age 51, struck in the left eye by the head of a rivet, resulting in blindness for three months. Several months later, vision in right eye began to fail and thirteen years later this eye showed an optic atrophy, which was regarded as a consequence of the original injury.

2. Male, age 57, struck in the right eye by a piece of steel. Panophthalmia with exenteration of the globe, six days after the injury. No foreign body found, but this was cast off on the 17th day, resulting in diminution of the inflammatory symptoms. The left eye, heretofore normal, in four months showed partial optic atrophy, vision being reduced to 1/50.

The above cases would tend to prove that there are other sympathetic affections of the eye besides uveitis. C. L.

### Experimental Fistulization of the Anterior Chamber by Sclerectomy.

WEEKERS, L., AND HEUVELSMANS, C. (Fistulisation de la chambre antérieure par la sclerèctomie, *Archives d'Ophtal-*

*mologie,* 1909, Vol. XXIX, p. 698), describe the operation as performed by them on a rabbit. For several days the conjunctiva was puffed up at and near the site of the operation, but this subsided, and at the end of five months there was only a slight raising of the conjunctiva. The anatomic examination showed a fistula starting at the anterior chamber, and ending in a subconjunctival ampulla. Small particles of iris tissue obstructed the opening into the chamber, and the fistula itself contained some iris pigment, the latter being also found in the subconjunctival ampulla. It is evident that there is an actual dispersion of the aqueous through the subconjunctival tissues.

Their conclusions are:

1. It is necessary to make the incision through the entire thickness of the sclera in order to obtain a permanent fistula.
2. The incision should be made as close as possible to the cornea.
3. Sclerectomy made without iridectomy is exposed to the dangers of hernia of the iris into the scleral wound.

C. L.

### Vernal Catarrh.

Gabrielides (Kératite printanière, *Archives d'Ophtalmologie,* 1909, Vol. XXIX, p. 703) reports a case where the unusual condition of the cornea partaking of the lesion was observed. There was a superficial, grey area 3x1.5 mm. lying over the pupil. No infiltration or vascularization. The lens showed that it was surrounded by small points invisible to the naked eye, while the lesion itself was composed of a large number of these points very close to one another. There was diminution of vision, lacrimation and photophobia. Glanglionic enlargement was present. The conjunctiva showed the lesions of vernal catarrh. The corneal spot was curetted, but there was no result. Histologically, the scrapings showed polynuclear, lymphocytes and squamous cells. No eosinophiles or special cells. The vegetations from the conjunctiva showed nothing unusual. C. L.

### Actual Cautery in Hernia of the Iris and Sympathetic Ophthalmia.

Trousseau, A. (La cautérization ignée des hernies de l'iris et l'ophtalmie sympathique, *Archives d' Ophtalmologie,* 1909, Vol. XXIX, p. 684), reiterates his belief that cauterization of prolapses of the iris lights up a sympathetic ophthalmia.

He refers to his former paper (1897) and describes a case where he operated for cataract on a man 63 years old. The patient left the hospital on the eighth day, with no ocular injection, and resumed his occupation as a gardener. The next day he returned with severe pains, due to minute hernia of the iris, which was dressed antiseptically. The next day the assistant removed the dressing and lightly cauterized the hernia. Ten days later the other eye showed the symptoms of sympathetic ophthalmia, which has progressed towards blindness, while the eye originally affected was never injected and has good vision. In another case, a woman with an infected conjunctiva was operated by another oculist. There was a hernia, which the attending physician thought was easier operated by cauterization than excision. The result was a sympathetic ophthalmia, which is still getting worse, in spite of enucleation of the causal eye. C. L.

### Endothelium (Perithelium) or Epithelium? Contribution to the Study of Tumors of the Orbit.

Van Duyse (Endothèle (perithèle) ou épithèle? Contribution a l'étude des tumeurs de l'orbite, *Archives d'Ophtalmologie,* 1909, Vol. XXIX, pp. 657 and 744), in a long and interesting article discussing the character of orbital tumors, comes to the following conclusions:

The orbit contains tumors of epithelial origin, made up of epithelial elements, which heretofore have been considered endothelial in character.

Surrounded by a capsule, their carcinomatous aspect is in contrast to their benign course.

They correspond to the fibro-epithelial embryogenic tumors described by Hinsberg in the salivary glands and palate.

Their origin is an anteocular, ectodermal one, in the region of the connective tissue which furnishes the greater part of the orbital walls.

These neoplasms of the orbit must be examined by methods which bring into relief certain cardinal elements of the structure, the epithelium (Haïdenhain's method, after mordantage by iodides). C. L.

### Graphic Tracings of Nystagmus.

Buys, E., and Coppez, H., Brussels (Tracés graphiques du nystagmus, *Archives d'Ophtalmologie,* 1909, Vol. XXIX, p.

737), have devised an instrument for registering nystagmus. It consists of a monocular (or binocular) stand, supporting a cup varying in size and shape according to the case. It is closed by a membrane of delicate gold-beater's skin, and is fastened to an arm, movable horizontally or obliquely. The cup can be exactly adjusted to the eye, and is connected by a rubber tube to a recording apparatus. The apparatus is firmly attached to the head, but the cup must not come in contact with the orbital walls. Some interesting tracings are given. In miner's nystagmus the oscillations are very small and frequent. The ascending and descending lines are alike. Each oscillation lasted about 1/5 second: there are 260 to the minute. There is no resemblance to the tracings produced by vestibular nystagmus. C. L.

### Subconjunctival Dislocation of the Lens Upwards and Inwards; Migration Into the Cul-de-Sac Downwards and Outwards.

Lagrange, F., Bordeaux (Luxation sous-conjunctivale du crystallin en haut et en dedans; migration dans le cul-de-sac conjunctival en bas et en dehors, *Archives d'Ophtalmologie*, 1909, Vol. XXIX, p. 753), reports the following case: A servant was struck on the right eye, followed by severe pain, nausea and loss of consciousness, and loss of sight. On touching her upper lid, she felt below it a small round swelling, very firm to the touch, When seen by Lagrange, five days later, there was a rupture above, with incarceration of the iris, while the lens was seen in the inferior cul-de-sac. It had probably been forced through the chemotic subconjunctival tissue by the action of the orbicularis.

### Regional Analgesia in the Surgery of the Lids and Lacrimal Apparatus.

Chevrier, L., and Cantonnet, A., Paris (L'analgésie régionale dans la chirurgie des paupierès et de l'appareil lacrymal, *Archives d'Ophtalmologie*, 1909, Vol. XXIX, p. 755), have performed 26 operations under anesthesia produced by injection of some fluid (e. g., 1/200 cocain, or novococain 1/100, or stovain 1/100, with the addition of 1/1000 adrenalin, one drop to 2 cc. of the solution) around the trifacial nerve. It is necessary to wait 10-15 min. before operating. The exact point of the injection depends on what portions of the eye is to be operated on and, consequently, what part of the nerve must be made anesthetic. C. L.

### A New Diploscope.

Bjerke, K., Linköping (Un nouveau diploscope, *Archives d'Ophtalmologie,* 1909, Vol. XXIX, p. 764), describes an instrument which he claims is able to measure all the latent deviations of the eye. The mathematical theory underlying its construction is given. C. L.

### Acute Palpebral Dacryoadenitis.

Beauvieux. Bordeaux (De la dacryoadénite palpébrale aigue, *Archives d'Ophtalmologie,* Vol. XXIX, p. 772), has observed six cases, whose histories he reports. It was more often observed in the young (17 months to 13 years), and the etiology is very obscure. One point of interest is the fact that five cases of such a rare disease were seen in two months. The disease was always unilateral, which speaks against its epidemic character, as does the fact that only the palpebral gland was affected. The onset was abrupt, there was more or less edema of the lids, closure of the eye and pain, both spontaneous and on palpation. The duration was variable. C. L.

### Orbital Heteroplasty by Grafting the Eye of a Rabbit.

Bonnefon (Hétéroplastie orbitaire par la greffe d'oeil de lapin, *Archives d'Ophtalmologie,* 1909, Vol. XXIX, p. 784), reports two cases, one 8 and the other 9 years after the operation. In both cases there was a movable prominence, about the size of a small nut, over which the prothesis fitted well, and the cosmetic result was excellent. An atrophy takes place by absorption of the soft, internal parts of the eye, leaving a hard, permanent body, which has no bad effect on the orbital tissues and gives a good support for the artificial eye. C. L.

### Regional Anesthesia in Surgery of the Lids and Lacrimal Apparatus.

Chevrier, L., and Cantonnet, A. (L'analgésie régionale dans le chirurgie des paupières et da l'appareil lachrymal. *Gazette des Hôpitaux,* December 9, 1909, No. 130, p. 1743), The writers describe their method of producing local anesthesia by injections in the region of the nerve, which they think has a decided advantage over injections directly in the site of the operation, because less anesthetic is required and because there is no deformity of the part produced by the injection. Any of the anesthetic solutions may be used, cocain ½%, stovaine 1%, alypine 1%, the author's preference, novococain 1%, to which a little adrenalin is added. In making an injection, it is necessary to wait 15 minutes, until the nerve has been thoroughly penetrated by the anesthetic. The upper lid derives most of its sensitive nerve filaments from the supraorbital nerve, which emerges though the supraorbital foramen and can be easily located. Sometimes these filaments arise, however, before the nerve emerges from the orbit, and it is necessary, therefore, to strike the nerve in the orbit. The inner fourth of the upper lid is supplied by the supratrochlear, and an injection made along the roof of the orbit, above and just external to the pulley for the superior oblique, will affect both nerves. The external fourth of the upper lid is supplied by branches of the lacrimal nerve.

The lower lid receives its sensitive filaments from the ascending ramifications of the infraorbital nerve, a branch of the superior maxillary, emerging through the infraorbital foramen. These anatomic considerations show the necessity of three injections to attack the three sources of innervation. For injecting the supratrochlear and supraorbital nerves, the needle is inserted above and a little to the inside of the pulley, which is located by the finger, and passed along the roof of the orbit, upward and outward about one-half and two cms., and the piston must be pushed as the syringe is inserted, so as to have fluid in advance of the needle. After injecting two cc. massage lightly. The external injection for the lacrimal nerve is made by inserting the needle on a level with a line prolonged from the external commissure. Under the orbital ridge, the needle is carried upward and inward three or four cms., and the anesthetic deposited between the periosteum and the lacrimal gland. Massage lightly. The injection for the infraorbital must be made at the level of the infraorbital foramen and the syringe held in such a position that the axis of the needle is in the axis of the canal. The point is entered a little to the inner side of the middle of a line running from the groove which marks the superior limit of the wing of the nose to the insertion of the masseter in the malar bone. The lacrimal gland is innervated by the lacrimal nerve, and the lacrimal sac receives filaments from the external nasal nerve. This latter, after running along the internal wall of the orbit, emerges below the pulley, where it takes the name of the infratrochlear. Its ramifications innervate all the skin internal to the upper lid, and the skin of the nose. The lower part of the lacrimal nasal canal receives its filaments from the anterior dental nerve. Anesthesia of the sac, therefore, is obtained by subtrochlear injection. The pulley having been located, the needle is inserted below and a little to the inner side of it until the internal wall of the orbit is felt. Anesthesia of the anterior dental nerve can be obtained by suborbital injection, as described above, or by anesthetizing the entire superior maxillary in the pterygo-maxillary fossa.

They have applied their method in twenty-one cases. These were trachoma, different surgical proceduree, seven; extirpation of the lacrimal sac, three cases; "Panas" for entropion, one case; excission of the conjunctiva, one case; "Szymanowsky," one case; chalazion, five cases; tarsorraphy, one case; cauterization, one case. All the results were excellent.

L. W.

### Syphilitic Chancre of the Bulbar Conjunctiva.

Rouvillois, H. (Chancre syphilitique de la conjonctive bulbaire, *Revue Générale d'Ophtalmologie*, July, 1909, No. 7, p. 18), reports such a case. A week before the patient was seen he was struck in the eye by a finger-nail of one of his companions during a football game, and states that the day following the accident the eye was red, with excessive lacrimation. It remained thus several days without pain, but as it showed no disposition to heal, he presented himself for examination.

The right eye showed considerable chemosis, and between the caruncle and the limbus was a swelling, red, edematous and of crescent shape. Above and below this swelling were two elongated ulcerations. These ulcerations were yellowish and covered with a fine diphtheritic membrane. All the surrounding conjunctiva was indurated. The balance of the eye normal. On the affected side, the preauricular gland was the size of a pea, hard and painless. Submaxillary was the size of a walnut, also hard and painless. Superficial cervical glands also involved. Glands on the other side also slightly affected. Treatment by antiseptic powders and lavage had no effect until about three weeks afterwards, when the swelling seemed to gradually diminish. At the same time a typical roseola appeared upon the flanks and face. Patient was immediately put under anti-syphilitic treatment and the lesion diminished little by little. Ulcerations healed, but the induration persisted a long time, so that two months after the accident it had not completely disappeared.

Chancre of the bulbar conjunctiva is the rarest form. A review of the literature shows very few cases of chancre thus located. The cardinal symptoms are the ulceration, the induration and the involvement of the glands. The author draws attention to the fact that in his case the involvement of the lymphatics was not unilateral, as usually occurs, but bilateral, and believes, therefore, that there is an anastomosis in the median line between the lymphatics, draining the conjunctiva of each eye. L. W.

### Researches Upon the Nature and Etiology of Trachoma Verum.

Pascheff, C., Sofia (Recherches sur la nature et l'etiologie du trachoma verum, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 1.), attempted to produce artificially follicles in the conjunctiva by inoculating a conjunctiva with pieces of adenoid tissue freshly removed from a throat. In three days reddish nodules appeared in the cul-de-sac and on the tarsal conjunctiva of the upper lid, which finally became chronic. Examination of an extirpated piece of conjunctiva showed the formation of follicles, and a large number of lymphocytes. Two out of five other cases gave similar results, the others being negative. His conclusions are:

(1) The conjunctiva will react to inoculation of lymphoid tissue by the formation of follicles.

(2) There must be, however, a suitable soil for the growth.

(3) If the follicles can be produced experimentally by agents other than trachoma, the proof of the latter's contagiousness is lost.

(4) The follicle is only a *germinating center* for the adenoid tissue in which it forms.

(5) The lymphocytes in the lymph spaces are the same as those in the adenoid tissue, except that in the former small lymphocytes with basophilic protoplasm predominate.

(6) Experimental follicular conjunctivitis may show, as the only signs of the conjunctival reaction, a lymphocytic infiltration of the adenoid tissue.

With the above as a basis, the author took up the study of trachoma granulosum chronicum simplex, taking specimens from the tarsus, cul-de-sac, ball, and cornea. In those obtained by expression he found lymphocytes; rarely multinuclear cells; endothelial cells; large multinuclear, pale cells, and the phagocytes of Villard. Rarer structures found in the granulations were plasma cells; polynuclear neutrophiles and eosinophiles; Russell's hyalin bodies; giant cells, and filamentous elements near the periphery of the granulations. The author describes several cases clinically. Bacteriologically he found frequently diplobacilli of different sizes, and by the hanging-drop method found small, straight or curved rods and granules, which showed movement. By culture methods, he was able to isolate staphylococci, streptococci, the xerosis bacillus, the bacillus subtilis, and a special bacillus. This was a little, short rod, or slightly elongated granule, arranged in pairs, staining with Gram, growing on ordinary media, on agar in the form of greyish colonies of the size of a pin's head or smaller. It produces little effect on the conjunctiva.

The author's conclusions are:

(1) True trachoma is characterized by a richly developed lymphadenoid tissue, with germinal centers.

(2) This has no specific structure, resembling adenoid vegetations, etc.

(3) This tissue, which is only a hyperplasia of the conjunctival adenoid layer, forms abundantly in the more vascular parts of the conjunctiva, and the follicle is usually surrounded at its base and apex by thrombosed vessels.

(4) Trachoma may take either the granular or the follicular form, but both may be present in the same eye. In the follicular form, phlyctenulæ may also be present on the limbus.

(5) The identity of structure of adenoids of the nasopharynx and follicles of the conjunctiva implies an identity of cause or reaction. In both cases there must be a proper soil, i. e., a lymphatic diathesis.

The article is illustrated with several drawings showing the histology of the disease as well as its bacteriology. C. L.

### Congenital Serous Cyst of the Sclera.

Villard, H., Montpellier (Kyste séreux congénital de la sclérotique, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 36), reports the following case: A boy of 5 years presented himself with a congenital tumor of the right eye. It had been stationary up to his fourth year, when it began to increase in size, following an attack of measles. An attempt was made to excise the tumor in toto, but as it was found to extend down between the layers of the sclera, it was punctured and the anterior portion was resected. A transparent, aqueous fluid escaped, which showed no signs of cysticercus. There was no communication between the cyst and the interior of the eye, as it lay entirely within the scleral tissue. The interior of the cyst was lightly curetted and cauterized with Flemming's solution, then washed out and the conjunctiva sutured over it. The result was a complete cure, with no return in eleven years. Histologic examination of the extirpated piece showed a very delicate layer of epithelium. Where it was best developed, it showed a stratified cylindrical structure, covered with squamous epithelium. In the less developed portion, i. e., where it had been under greatest tension, there was a thick layer of interlacing connective tissue fibers, evidently derived from the sclera. The author believes that the cyst was caused by an embryonal inclusion of bulbo-conjunctival epithelium in the sclera. C. L.

### Hemorrhagic Glaucoma and Iridectomy.

Van der Hoeve, J., Utrecht (Glaucome hémorragique et iridectomie, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 51), advocates iridectomy in glaucoma hemorrhagicum over miotics, and reports a case where the use of pilocarpin was of advantage at first, but where resort was made to iridectomy for permanent cure. Vision was 5/5 after correction. C. L.

### Circumscribed Ectasia of the Cornea.

Adamantiadis, Brousse (Un cas d'ectasie circonscrite de la cornée, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 46), reports the following case: The cornea of the right eye presented at its upper internal part a whitish tumefaction in the form of a senile arc. Visual acuity was reduced to fingers at 1 meter, without correction; with correction, V = 1/8.

There was also convergent strabismus, the right eye deviating Cauterizing caused perforation with emptying of the anterior chamber. After several cauterizations, the vision was raised to 1/5 after correction. C. L.

### Chancre of the Right Bulbar Conjunctiva.

CLERGERIE, VILLEMONTE DE LA, Nice (Chancre syphilitique de la conjunctive bulbaire droite, *Archives d'Ophtalmologie,* 1910, Vol. XXX, p. 43), reports a case of this rare condition. The patient was first seen about a month after the first symptoms of conjunctival irritation appeared. The right side of the face was swollen, and the preauricular ganglion was enlarged, as was the inferior maxillary. The lids were edematous, and there was a very pronounced tumefaction of the bulbar conjunctiva, which was hard, but not ulcerated. Several days later, however, an ulcer appeared where the chemosis was most prominent, and which presented the characteristics of hard chancre. No microbe or spirocheta could be found bacteriologically. Antiluetic treatment caused the condition to disappear. C. L.

### Total Sensitivomotor Ophthalmoplegia of the Right Eye, With Blindness.

CLERGERIE, VILLEMONTE DE LA, Nice (Ophtalmoplégie sensitivo-motrice totale de l'oeil droit avec cécité, *Archives d'Ophtalmologie,* October, 1909, Vol. XXIX, p. 623), reports the following case: A woman, age 50, good history, began to suffer from headaches, followed in about four months by double vision, the deviating eye still possessing good vision. The right eye protruded and soon became blind, accompanied by complete ptosis. The headaches increased in severity. There was complete sensitivomotor paralysis, including the ophthalmic branch of the trigeminus. The fundus was normal. Left eye normal. A lesion at the right sphenoidal fissure was diagnosed. Under mercury and strychnin the condition improved until all that was left was a complete amaurosis and paralysis of the right externus, when the patient stopped treatment. C. L.

### Conjunctivitis From Eclabium Elaterium.

GABRELIDES, A. (Conjonctivite par l'eclabium elaterium, *Archives d'Ophtalmologie,* October, 1909, Vol. XXIX, p.

631), reports the following case: A woman, while making a preparation to apply to the neck of her son, got some of the juice of a cucumber in her eye. Several hours later she was awakened by an intense pain in the eye. The lids were swollen and there was profuse lacrimation. The conjunctiva bulbi was so edematous as to cover the cornea. There was a seropurulent conjunctival secretion. Under treatment, the condition disappeared. C. L.

### Measurement and Notation of the Visual Field.

Armaignac, H., Bordeaux (Mensuration et notation du champ visuel, *Archives d'Ophtalmologie,* October, 1909, Vol. XXIX, p. 593). This article was abstracted in the Annals of Ophthalmology, 1909, Vol. XVIII, p. 863. C. L.

### Nasolacrimal Pathology in Hereditary Syphilis.

Antonelli, Paris (Pathologie nasolacrymale dans la syphilis héréditaire, *Archives d'Ophtalmologie,* October, 1909, Vol. XXIX, p. 599), has found in a number of cases of hereditary syphilis an exostosis of the free border of the nasal bones, accompanied by an atrophy or more or less thinning of the periosteum and skin. This is one of the minor stigmata of hereditary syphilis. Dacryoadenitis, due to hereditary syphilis, has never been seen clinically, though histological changes have been found in the glands of infants affected thereby. On the other hand, dacryocystitis, due to hereditary syphilis, is not uncommon. It is rarely congenital, but appears during early infancy, though it is possible to have an intrauterine dacryocystitis with congenital fistulæ of the lacrimal sac. There is also a dacryocystitis accompanying the so-called scrofular rhinitis or a lupus of the face or nose in young patients showing stigmata of hereditary syphilis. It might be called a parasyphilitic stigma. C. L.

### The Estimation of Distances in Normal Binocular Vision.

Coullaud, H. (L'appréciation des distances dans la vision binoclaire normale, *Archives d'Ophtalmologie,* October, 1909, Vol. XXIX, p. 608), has calculated that it is geometrically and physically impossible for a person with normal eyes to see objects in relief at a distance greater than 223 meters.
C. L.

### Hard Chancre of the Lids.

CAUVIN, CH. Nice (Du chancre induré des paupières, *Archives d'Ophtalmologie,* October, 1909, Vol. XXIX, p. 612), relates a case in a child of 10 months. This is a rare condition (21 out of 849 cephalic chancres). The parents and the nurse were free from syphilitic taint, and no method of infection has been discovered. The lesion was at the middle of the palpebral margin. Under injections of biniodid of mercury it totally disappeared, leaving only a small area bare of cilia to mark its previous location. Nevertheless, an eruption appeared later on, and the parents of the child when told of its nature, ceased to come for treatment.

The author gives an extended discussion of the symptomatology, diagnosis and prognosis of palpebral chancre.

C. L.

# ABSTRACTS FROM ITALIAN OPHTHALMIC LITERATURE.

BY

V. L. RAIA, M. D.,

PROVIDENCE, R. I.

### Bacteriology of the Conjunctiva Before and After the Extirpation of the Lacrimal Sac.

CALDERARO, DR. (*Clinica Oculistica,* August-September, 1909). In chronic dacryocystitis the conjunctiva contains the same germs that are found in the secretion of the lacrimal sac. The pathogenic germs are the different staphylococci, streptococci, pneumococcus, diplobacillus of Morax and Axenfeld, b. xerosis, Friedlander's b. By removing the sac it was thought that these would disappear from the conjunctiva, a fact which is contrary to the bacteriologic results. Different explanations have been given to explain their presence. Dr. Calderaro has examined the conjunctiva before and after the extirpation of the sac, has studied the quantity and the virulence of the pathogenic bacteria by making careful cultures, isolating them and inoculating them in the veins and corneal tissue of rabbits. His researches show that after removal of the sac in chronic dacryocystitis the non-pathogenic germs increase in number, while the pathogenic ones actually decrease in the conjunctiva and become less virulent if the lids remain open. If a bandage is used, even after many months from the extirpation of the sac, the germs are apt to acquire renewed vigor and power of infection. The practical deductions from these experiments are that operative acts on the cornea after removal of the sac are very dangerous, if occlusive bandages are used, not only in very recent cases, but also after the lapse of many days and even months. According to Calderaro, all this is due to the stagnation of the tears on the conjunctiva, which fact, with the elevated temperature, favor the growth of bacteria. The tears act mechanically by washing the conjunctiva and transporting its germs through the lacrimal apparatus.

Immediately after extirpation of the sac the germs of the conjunctiva become less active, but three or four hours after they possess great virulence. In consequence of this fact, operations for cataracts ought not to be undertaken before at least fifteen days, and no occlusive bandage used but the open method. Three times a day at least the eye ought to be washed with sterile chloride of sodium solution, which carries away mucus and epithelial detritus and pathogenic germs. That occlusion of the lacrimal apparatus favors the development of the germs in the conjunctiva the author has proved experimentally on the animals by ligating the canaliculi and infecting the conjunctiva with staphylococcus. The eye which was left with lacrimal apparatus intact under occlusive bandage showed no pathogenic germs, while the other, with occluded canaliculi, developed a very virulent microorganism. The extirpation of the lacrimal gland with that of the sac renders the postoperative infection more dangerous, for the absence of the tears renders the conjunctiva a good field for the growth of pathogenic germs. V. L. R.

### Clinic, Anatomic, Bacteriologic Contribution to Perinaud's Disease.

SCALINCI, NOE (*Clinica Oculistica,* October-November, 1909). This affection was described twenty years ago by Perinaud, who considered it due to an infection from animals. Such an idea prevailed for several years until Gifford denied it. Sixty cases have been reported in all, and while anatomically and clinically at present the disease is better known, its etiology is just as obscure as it was twenty years ago. The author reports a case which presents some interesting features, and which he has examined microscopically and bacteriologically. When the patient was first seen, the upper lid presented such an enormous swelling that it could not be everted and examined. The microscope revealed an inflammatory infiltration of the tarsus, a finding which contradicts the statement of others who had denied any participation of the cartilage. During the first period of the disease with the swelling of the lid there was also an abundant mucopurulent discharge from the conjunctiva, a fact which is not found in other cases reported. Besides the granular vegetations on tarsal conjunctiva, the bulbar conjunctiva showed a papillary growth, which gradually disappeared, while those on the inner part of the lid lasted for a longer time. The cultures obtained from the secretion of the conjunctiva, from the pus of the incised preauricular gland and the apex of a papillary growth of the conjunctiva showed the presence of streptococci and staphylococcus pyogenes aureus, no other special germs having been observed. Dr. Scalinci with others thinks that Perinaud conjunctivitis is not a pathologic entity, but the result of many other affections. In fact, the unilateral polyadenitis on the same side of the eye affection has been found in trachoma (Calini), in streptococcic conjunctivitis (Cunningham) and in irritation produced by the stinging of an insect (Cosmettatos).

V. L. R.

### An Operative Process for Emptying the Orbital Infundibulum With Preservation of the Eyeglobe.

Calderaro, Dr. (*Clinica Oculistica,* October-November, 1909). The removal of retrobulbar tumors with preservation of the eye received a great impulse since Krönlein invented his operative process. Although a decided progress was made in this direction, anyone who has had any experience with this operation must admit that even the resection of the external wall of the orbit is insufficient to remove large tumors from the apex of the orbit. Czermak modified the Krönlein operation, in order to enlarge the external opening, by resecting the malar bone; but this, although an improvement, did not remove the difficulties already mentioned. Dr. Calderaro has devised another process by which he has had the most splendid results. He operates as follows: An incision beginning from the median line of the forehead is made to the periosteum at three centimeters from the orbital margin and is prolonged laterally and down, maintaining always the same distance from the said orbital ridge. A big flap results, which will comprise the upper and lower lid, with the eye-globe detached from its optic nerve. This flap is divided to the margin of the orbit, the tarsoorbital fascia is incised, the ocular muscles are then separated from the sclera, and the optic nerve severed from the eye. At this stage of the operation the whole content of the orbit can be inspected, and if the tumor is rather large a triangular piece of the external bony wall may be resected. After a careful exenteration of the orbit the wall flap with the eyeball is lifted and sutures applied on the regions from which it was separated. Everything proceeds satisfactorily, and although the eye assumes an abnormal position in regard to the axis of the cornea, the net result is very good indeed. If we consider that the Krönlein operation is not always practicable, and the result of the exenteratio of the orbit, according to the old method, very unsatisfactory, producing great deformity, we can well understand the enthusiasm displayed by the author in regard to his operative procedure. V. L. R.

### Picric Acid in the Treatment of Ulcus Serpens.

CECCHETTO, E. (*Annali Di Ottalmologia fasc.*, 8-9-10, 1909). Picric acid has been used by different ophthalmologists in burns of the lids, but especially in burns by lime has been highly praised. The author has experimented with it in infected ulcers of the cornea, in suppurative keratitis, and in hypopyon keratitis, with the most gratifying results. In this latter case the infiltration soon clears up, the pus in the anterior chamber disappears and the solution of continuity becomes promptly repaired by cicatricial tissue. The preparation he uses is a 2% ointment of picric acid, twice a day.

V. L. R.

# SOCIETY PROCEEDINGS.

## SECTION ON OPHTHALMOLOGY.

## COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting November 18, 1909. Dr. William Zentmayer, Chairman, presiding.

### Chronic Sympathetic Ophthalmitis.

Dr. Friebis cited the case history of an iron-worker, aged twenty years, who had been struck in the left eye on October 28, 1908, by a piece of steel. The wound healed, but one month after the injury inflammation ensued, for which he was treated by a physician in an adjacent city. On March 9, 1909, he sought treatment at the Wills Eye Hospital. During his treatment here the injured eye induced inflammation in the sound eye, and was enucleated by Dr. Posey. The patient was discharged the latter part of June. Subsequently he came under the observation of Dr. Friebis, and at this time the eye presented the following conditions: Decided corneoscleral congestion, photophobia, tenderness in the ciliary zone, tension about normal, complete posterior synechia, and the lens was somewhat opaque from the plastic exudates of the iridocyclitis. The iris was atrophic, and in more than one-half of its circumference was distended in the form of a vertical crescent by fibrinoplastic exudates. The central portion of the lens was clear, and vision was about 15/200. The fundus presented a hazy appearance, but no abnormalities were present aside from a small atrophic patch near the upper edge of the disk.

In view of the above conditions, Dr. Friebis gave an unfavorable prognosis, but under a course of mercurial inunctions and sweats, with the internal administration of potassium iodide in ascending doses, which was subsequently replaced by sodium salicylate, and the local administration of hot compresses, atropine, and dionin, the condition began to improve, and at the expiration of five days the vision had risen to 15/100. The improvement was progressive until six weeks ago, when normal visual acuity was obtained.

Dr. Friebis thought that this undoubted case of chronic sympathetic ophthalmitis having recovered normal vision, despite the serious pathological changes which had taken place in the ciliary region, iris, and lens, might be considered restored to permanent usefulness.

Dr. Posey said that he had had this patient under his care for five or six months at the Wills Eye Hospital. At the time of admission, both eyes were the seat of a violent iridocyclitis. After consultation with some of his colleagues, the removal of the exciting eye, *i. e.*, the left, was decided upon, as there was so much exudation in the pupil and the iridocyclitis was so great that it seemed most unlikely that any procedure could ever be practiced which would restore any degree of vision to the eye. The enucleation seemed to exercise a favorable course upon its fellow, for the cyclitis lessened, and after months of much the same treatment as Dr. Friebis has outlined, vision was brought to 5/12.

While the patient was under observation, it was interesting to note the development of the small cysts in the iris, which were the products of the iris bombé.

Dr. Posey was unable to share with Dr. Friebis his favorable views regarding the ultimate outcome of the case, as he feared that the almost complete posterior synechia and the already quite marked capsular haze might develop conditions which would be most deleterious to sight.

Dr. Friebis believed that in view of the complete subsidence of all inflammatory symptoms and the restoration of normal vision, and that by performing in addition an iridectomy to re-establish the communication between the anterior and posterior chambers, his conclusion as to the permanent usefulness of the eye was warranted.

### Intense Neuroretinitis Probably Due to Chlorosis.

Dr. Wm. Campbell Posey exhibited a girl, aged fifteen years, whose left eye was the seat of an intense neuroretinitis, the edges of the nerve being everywhere obscured by a dense mass of exudate. Several small hemorrhages could also be observed lying on the mass. The retinal veins were broadened, tortuous, and beaded. There was a mild neuroretinitis in the right eye. The patient had always been fairly healthy. Menstruation, however, had been very irregular and her bowels extremely constipated. There had been no headache, with the exception of a short interval preceding the loss of sight. Examination of the urine was negative. In the absence of other causes, Dr. Posey considered the neuroretinitis in all probability to have been induced as a consequence of chlorosis, as the blood count showed hemoglobin, 70 per cent.; erythrocytes, 4,770,000; leukocytes, 12,600. Dr. Posey stated that the case was not dissimilar to the one which he had reported before the American Ophthalmological Society in July last.

Dr. Emory Hill (by invitation) read the case history of the patient.

Dr. de Schweinitz agreed with Dr. Posey that optic neuritis, or at least papilledema, was occasionally caused by simple anemia and by chlorosis, and referred to the case history of a patient of his own with extensive choked disk that had disappeared under the influence of the administration of the various preparations of iron. He referred to Mr. Risien Russell's recent communication on the significance of optic neuritis and the doubt which this author had cast upon the relationship of simple anemia to the production of choked disk, but felt, while the cases must be unusual and the etiology not a common one, that it none the less existed, especially as we know that under similar circumstances serious lesions, for example, thrombi in the sinuses of the brain, can arise. Dr. de Schweinitz also pointed out that the mere presence of anemia, even in the absence of other symptoms, could not be definitely stated to be the cause of the optic neuritis in question, inasmuch as intracranial lesions, notably brain tumor, are sometimes entirely free from localizing symptoms, and that, for example, in tuberculosis, an anemia might be present and yet the choked disk be due to a tuberculous process in the brain.

Dr. Walter L. Pyle stated that several years ago, in preparing an editorial on the relations of chlorosis to optic neuritis, he was struck by the numerous cases of so-called "inoperable brain tumors" with choked disk, in which subsequent blood-examination showed marked evidence of profound blood dyscrasia. After administration of proper ferruginous treatment, these patients improved, with associated marked subsidence of the neuritic swelling and partial restoration of vision. The significant point in this connection is the advisability of careful blood-study in all cases of choked disk, either unilateral or bilateral. As he recalled it, the relative papers that he had reviewed had reference to chlorosis, and not to pernicious anemia.

Dr. T. H. Weisenburg stated that he would like to call the attention of Dr. de Schweinitz to a case which he had seen for him in Dr. Weisenburg's nervous wards in the Philadelphia Hospital several years ago. He had no doubt that Dr. de Schweinitz would recall this case. It was that of a man, aged thirty-eight years, who had a sudden gastric hemorrhage, which was followed by blindness and some spinal cord symptoms. Dr. de Schweinitz made the ocular examination, and found an optic neuritis which subsequently developed into secondary optic atrophy. Since then the spinal cord symptoms have disappeared, but the ocular phenomena are still present. The blood examination at that time showed a grave anemia. Dr. Weisenburg had never seen, however, optic neuritis occurring in pernicious anemia, and he agreed with Dr. de Schweinitz that such a condition probably does not occur.

Dr. H. F. Hansell stated that the reference by Dr. Weisenburg to the patient in the Philadelphia Hospital reminded him of another patient in the same hospital. It was a boy, aged sixteen years, who had been brought to the hospital from a ship which had just arrived from a foreign country. He had pernicious anemia with double optic neuritis and numerous retinal hemorrhages. By repeated examinations of the feces it was learned that the cause of the disease was the hook worm. Under appropriate treatment the cause was permanently removed and the patient recovered from the anemia, optic neuritis, and retinal hemorrhages.

Dr. Posey replied that there had always been a doubt in his mind as to whether such extensive eye changes could be due to an anemia pure and simple. The case which he had presented had irregular menstruation and suffered from extreme constipation, and he thought it not unlikely that these two conditions, in conjunction with the anemia, had doubtless produced some intoxication, with the true nature of which we are as yet unacquainted.

### Case of Mucocele of the Frontal and Ethmoidal Cells Operated Upon by Orbital Incision.

Dr. Posey also exhibited a boy on whom he had recently opened the frontal and ethmoidal cells by means of the Arnold Knapp operation. He showed the case chiefly to insist upon the desirability of closing the orbital wound after sufficient drainage had been obtained through the frontal and ethmoidal cells, by means of a drainage tube, which was held in position by means of a strip of adhesive plaster passed through the upper lip. This case had previously been operated upon by Dr. Parker, in Dr. Posey's absence, one end of the drainage tube having been permitted to project from the orbital incision. After this tube was removed, a mucocele formed at the inner angle of the orbit, which was the size of a small egg and resembled a hernia cerebri.

### Hydrocephalus With Ectopia Pupillæ.

Dr. Samuel D. Risley and Dr. T. H. Weisenburg presented for study a Slavic boy, aged five years, blind in both eyes, with enlarged skull and a bony tumor over the anterior fontanelle. Although a sturdy-appearing boy, there was a history of continuous ill health, commencing with alimentary disturbance in infancy, measles during first year, followed by enlarged submaxillary glands; later by a symptom complex suggestive of intracranial disease, probably hydrocephalus.

Dr. Risley said that in July, 1909, the boy became suddenly almost blind and the following September had five convulsions in one day. He was brought to the Wills Hospital in October, where he was first seen by Dr. Risley. The anterior fontanelle, which was unusually large, had remained open much longer than usual, but at the present time was the site of a large bony prominence, which, Dr. Risley suggested, had probably finally closed by the formation of a Wormian bone, forced during its formation upward into the tumor-like mass, by intracranial pressure. There was complete atrophy of both optic nerves, but the ophthalmoscopic picture was that of atrophy following choked disk, the veins being still large and tortuous.

The right pupil was displaced upward and inward when first observed, but this was intermittent, since at a later observation it was found quite normally situated and the left displaced. He did not, therefore, regard it as true *corectopia pupillae*. Both pupils responded to light, but would dilate irregularly again, even while under exposure to strong light. He regarded the case as one of external hydrocephalus with involvement of the ventricles. The enlarged head, the general demeanor of the child, the bony elevation over the anterior fontanelle, the papilledema with consecutive atrophy and the pupillary phenomena, as well as the clinical history, he thought, could be reasonably explained only on the theory of a uniform, long-maintained, intracranial pressure caused by effusion not only into the ventricles, but into the enveloping membranes of the brain. When exhibited to the section the child had been treated by inunctions through the agency of a mercurial bandage which had been worn for more than two weeks. Under this treatment the headaches had disappeared, the, general health had markedly improved, and the dread of the ophthalmoscopic mirror suggested increased perception of light.

Dr. T. H. Weisenburg stated the case in brief was one of internal and external hydrocephalus with failure of closure of the anterior fontanelle, with a consequent protrusion which calcified. There was also a history of general convulsions, but there was no weakness in any of the limbs. There was, however, a general increase of tendon reflexes. The most interesting part of the case, however, was the displacement of the pupil. When seen by Dr. Weisenburg both pupils were displaced up and in, the right more so. Subsequent examinations showed that the displacement varied, for in the last examination the left pupil was dilated more than the right. At no time in Dr. Weisenburg's examination were the pupils irregular or larger than normal. Their reactions, according to Dr. Risley, were slightly diminished.

Ectopia pupillæ is a rare phenomenon, and very little is known of its cause. It has been shown by the experiments of Piltz that by stimulation of the branches of the ciliary ganglion or short ciliary nerves the pupil could be displaced in any direction, but the important point is that when this is done they are irregular, differing from the round pupil described in the above case or in other similar cases.

Recently Dr. S. A. K. Wilson (*Brain,* 1906, p. 524) observed periodic ectopia in three cases of tumor or lesion of the third ventricle. Dr. Weisenburg had observed ectopia also in tumors of the pons and in cases of internal hydrocephalus.

There are only three possible causes of the phenomenon: (1) Malformations of the iris; (2) a disturbance of the apparatus concerned with dilatation or contraction of the pupil, which lesion may be either peripheral or (3) central.

Malformations of the iris have been well described by Best, who states that they may occur unilaterally or bilaterally and are associated with disturbance of the lens or iris and the pupils are irregular.

Should the peripheral mechanism which controls the action of the pupils be involved, there would be irregular pupils, such as have been described by Piltz. Therefore, this explanation can be excluded. There remains, then, only the theory that a central lesion causes this disturbance. In the cases described by Wilson there were, besides the ectopia, disturbances in the nucleus of the third nerve, and if it is presumed that the constrictor and dilator fibers have their central innervation within the third nucleus, this may be an adequate explanation. In the present case, reported with Dr. Risley, there is probably a dilatation of the third ventricle, and a similar explanation may be here given.

Dr. Walter L. Pyle stated that from the description of Dr. Risley's case it seems particularly one in which craniotomy would have been of advantage. When a student at Great Ormond Street Hospital, London, he saw several similar cases in the service of Sir James Barlow, in which the operation of craniotomy was followed by marked improvement of the visual, mental and constitutional symptoms.

Dr. de Schweinitz, referring to Dr. Risley's unusual and interesting case, asked Dr. Weisenburg whether the pupil phenomena which this child had presented belonged to the same class as those which had often been described in connection with specific infections in which the pupil was more or less displaced and sometimes pointed, to some of which phenomena Berger, Sachs, and others had called attention.

Dr. de Schweinitz, speaking again, and referring to Dr. Risley's statement that his patient's pupils were not always round, but had, on one occasion at least, assumed an ovoid form, thought that this indicated that they belonged to the same class to which he had previously made reference, and, if he was not mistaken, one author, because such displaced pupils assumed different shapes, had referred to them as ameboid pupils. He did not doubt that Dr. Weisenburg's theory was the one which most satisfactorily explained the phenomenon, although he thought it was not impossible that a peripheral action of the toxin, whatever the toxin might be, on the iris fibers themselves, or on the peripheral distribution of the pupil nerves, might be responsible for the condition which had been described.

As to the question of Dr. de Schweinitz, whether the ectopia described in such a case differs from the ectopia of peripheral lesion, Dr. Weisenburg thought that there was a difference, because in peripheral lesions the pupils nearly always are irregular, but he agreed with Dr. de Schweinitz that inasmuch as the same mechanism controlled the reactions of the pupil, whenever disturbance of the pupil occurred, there must be a disturbance in some portion of its reflex arc.

### Cyclodialysis.

Dr. Walter L. Pyle referred to the history of cyclodialysis and gave the technique of this procedure in detail, and after dealing with the after-treatment, complications, effects of the operation, and the manner in which reduction of the intraocular pressure was effected, spoke more in detail of the indications. He stated that cyclodialysis was technically very simple, and that it was less radical and less dangerous than an iridectomy, but that it was not reasonable to expect its performance to be followed by very successful results in cases in which an iridectomy was not feasible, or had already been done without effect. To fairly judge the efficacy of any surgical procedure and give definite percentages of relief and failure, it must be the first and elective operation. For this reason all statistics to date regarding the true value of cyclodialysis were neither reliable nor remarkably significant. In conclusion, he referred to the recent American literature on the subject, and cited the reported cases of Denman, Wilder, Brown, and Knapp.

Dr. de Schweinitz stated that his experience with cyclodialysis had been an extremly limited one, and that he had performed the operation only seven times—three eyes with secondary glaucoma, the original disease having been an iridocyclitis, and four eyes with absolute glaucoma. The operation on one of the eyes with secondary glaucoma proved to be unsuccessful, and iridectomy was subsequently required. In the other cases of this type of glaucoma, so far as he knew, the operation had reduced the tension and that it had remained reduced for the period of time (a short one, however, about two months) during which the cases were under observation. All of the observations for absolute glaucoma, the eyes being blind and the operations simply having been done for the purpose of relieving increased tension, irritability and pain, had proved to be successful in the sense that these symptoms were relieved by the operation. In one of the eyes of this series there had been some return of increased tension, but no return of pain. Five months was the longest period of time during which he had the cases of absolute glaucoma under his observation. No complications had arisen, and he had not thought it necessary to close the conjunctival wound with a suture.

Dr. Posey said that he had performd the operation on three cases of chronic glaucoma, and that he had remarked a lessening in the intraocular tension a short time after the operation, which had been maintained for the month or more during which the patients had remained under observation following the procedure. He had, however, not seen the patients of late, and was unaware of what the ultimate results of the operation had been. He was inclined to think, however, that the operation was chiefly indicated in eyes blind from glaucoma which were painful and irritable. He did not think the operation justifiable in cases of chronic glaucoma where the field was much compromised, as had been urged by some, for cyclodialysis has been known to be followed by hemorrhage in the macular region. Furthermore, he was convinced that the persistent and intelligent administration of miotics in this class of cases was productive of more good than any form of operative interference.

Owing to the small size of the wound, Dr. S. D. Risley thought a conjunctival suture was quite unnecessary and presented an additional source of infection.

Dr. Zentmayer stated that he had performed the operation upon four eyes in which iridectomy seemed to him to have been contraindicated, either because of the advanced stage of the glaucomatous process or because of the technical difficulties. The results he had to report were only the immediate ones. In one eye vision was improved from L. P. to 2/60, and the field from L. at fixation to a 10° form field. T. reduced to N. In one eye V. improved from fingers at 1 foot to 5/75, and field from fixation to 15°. T. reduced to N. In one eye V. improved from fingers at 2 feet to 5/35, and the field from 8° to roughly 40°. T. reduced to N. In one eye conditions unchanged except subjectively. The last case was one of subacute attack in a sightless glaucomatous eye. Cyclodialysis was performed because the patient refused enucleation. Although neither the T. nor the congestion was improved, the patient claimed to have been entirely relieved of the intense pain from which he had been suffering.

Dr. Zentmayer said that he had used the conjunctival suture for the same reason that he would employ it in a case of scleral puncture to afford protection from infection by bringing over it a conjunctival flap.

In closing the discussion, Dr. Pyle said that he had performed cyclodialysis in three instances, and had purposely omitted mention of these cases on account of their recent date. He hoped later to publish the final results. His idea in presenting his paper was to set forth the present status of the operation, and to describe the manner in which he thought it should be performed. He did not share the early enthusiasm of Meller. As to the advisability of omitting the conjunctival suture, he thought the matter of not sufficient import to merit discussion. He believed the slight advantage more than offset the trivial objections, and said he would continue to use the suture.

### A Clinical Note on the Relationship of Certain Forms of Skin Disease and Chorioiditis.

Dr. de Schweinitz thought that this relationship might appear in one of three ways: First, the skin lesion may be the origin of a pathogenic infection which is transferred to the chorioid. Second, the skin lesions and the chorioiditis may be coincident and probably due to the same toxemia or infection. Third, the skin lesions and the chorioiditis alternate; that is, at one time the patient has eruption of the skin, which disappears, to be followed at another period by a chorioiditis, which, in turn, subsides, and so they replace each other. All reference to the first of these classes was omitted, but Dr. de

Schweinitz described two cases of relapsing chorioiditis associated with extensive acne eruption, and several cases of the third group, in which attacks of eczema and chorioiditis alternated. In none of these cases could the presence of syphilis or tuberculosis be established. Dr. de Schweinitz was well aware that such cases as he had detailed by no means proved the relationship to which he had made reference, but it seemed to him as if this relationship of eczema, acne, and chorioidal disease was sometimes more than a coincidence. He believed that if it is admitted that an intestinal intoxication may occasionally be interpreted in an effort of elimination by the development of a skin disease—for instance, one of those which have been named—it is not beyond the limits of probability that it may have a similar interpretation in the development of chorioiditis or uveitis, and that sometimes the toxin is responsible for the skin lesion and on other occasions in the same patient for the ueval tract affection.

Dr. S. D. Risley stated that such an association of a skin and ocular affection had not been thought of by him, but he agreed with Dr. de Schweinitz in the interpretation of the phenomena.

### Bilateral Optic Atrophy, Associated With Enlargement of the Accessory Sinuses.

Dr. Langdon cited the case history of a boy, aged sixteen years, who had been employed in a leather factory, and who for the last fifteen months had suffered from headache, nausea, and vomiting. Eight months ago the vision became blurred, and he sought treatment at the Stetson Hospital, where it was found that the vision of the left eye had sunk to light perception, due to primary optic atrophy, and the right nerve was seriously affected. A course of mercury, iodides, and sweats failed to check the process, and the vision was lost. There was no involvement of the central nervous system and no signs of neuritis or papilledema. The fields were not taken.

The patient first came under the observation of Dr. Langdon in August, 1909, at which time the nerves were absolutely atrophic, the margins clear-cut, the lamina visible, and the retinal arteries small. No other fundus changes were noted. The family history was good. Thorough examination failed to detect any involvement of the central nervous system, or any of the internal organs. There were no nodes or rhagades; the teeth were not of the Hutchinson type, but were regular and suggestive of rhachitis. The patient was undersized. A nasal examination failed to reveal any involvement of the accessory sinuses. Skiagrams showed the sella tursica to be normal, but revealed a marked enlargement of the sphenoidal and frontal sinuses, but in view of the absence of any inflammatory condition affecting these sinuses, this enlargement was attributed to an overaction of the osteoclasts.

Dr. Langdon, having excluded consecutive atrophy of the nerves, and in view of the fact that the family history was negative and that anti-specific treatment had given negative results, concluded that the atrophy was dependent upon direct pressure on the nerves of the tracts, and thought it most likely that a tumor of the frontal lobe was the underlying etiological factor.

Dr. Holloway stated that he thought it was most unfortunate that the visual fields had not been studied in the early stages of the affection. He referred to Oppenheim's statement that growths of the hypophysis and its vicinity may produce a bilateral constriction of the fields or blindness affecting one eye, and that bitemporal hemianopsia was not the type usually produced.

He thought it probable that a growth of some character was responsible for the atrophy.

Dr. S. D. Risley thought that it was impossible, with any degree of certainty, to determine the actual cause of the atrophy, and felt that this case must be included with the long list of cases of this type that were etiologically obscure.

### Monocular Hemianopsia Due to Ethmosphenoidal Disease.

Dr. Frederick Krauss presented the history of a case of *Monocular Hemianopsia due to Ethmosphenoidal Disease.* The patient, a female, aged forty-eight years, had suffered for many years on account of supraorbital headache and inability to breathe through the nose. Examination disclosed frontal and ethmoidal disease on both sides. The ethmoidal cells were opened and the frontal cell washed frequently, with improvement for four months, when visual disturbances were noted by the patient in the right eye. This was transient, but recurred later, when a central scotoma could be mapped out, which quickly merged into a superior hemianopsia, with the field slightly tilted to the temporal side. The X-rays showed an opaque area anterior to the sphenoidal bone, the latter being apparently unaffected. The opaque area proved to be a very large posterior ethmoidal cell, with a pale lining, containing no pus. The sphenoid was opened and a small amount of mucus discharged. The following day there was a very free discharge of very offensive pus from the ethmoidal region. One week later the field had recovered more than half its former defect, with steady improvement since.

In the early stage the use of the bacillus vulgarius culture had been followed by an aggravation of the inflammatory symptoms, but no ill effects followed its use in the later stages.

Dr. G. Oram Ring asked the relation that the use of the bacillus vulgarius culture (Massolin) bore to the amelioration of the sinus inflammation.

Dr. Krauss, in reply to Dr. Ring, stated that he thought the use of the culture was without any effect, and that such had been his experience in several other cases in which it had been employed.

Meeting December 16, 1909. Dr. William Zentmayer, Chairman, presiding.

### Pemphigus of the Conjunctiva.

Dr. Edward A. Shumway exhibited a case of *Pemphigus of the Conjunctiva,* in association with extensive involvement of the scalp, trunk, hands and feet, and of the mucous membrane of the nasopharynx. There was a broad symblepharon of the inner third of the lower lid and a gradual extension of an opaque tissue over the entire corneal surface. The patient had been under treatment at the University Hospital, in the service of Dr. de Schweinitz, for a period of seven months, and the occurrence of fresh lesions had been studied. At times they appeared as bullæ, the walls of which had ruptured, and at others they presented themselves in the form of ulcerated areas covered with grayish-white membranes. The scalp and trunk were badly scarred, and the nails of the fingers and toes had been nearly all lost.

Dr. Walter L. Pyle stated that during the last ten years he had seen two cases of pemphigus of the conjunctiva, in both of which the diagnosis was confirmed by competent dermatologists. All treatment, including the modern methods of phototherapy (except radium) were used without benefit, the disease progressing steadily to the destruction of vision. He believed the prognosis of this condition to be hopeless; and he felt that he would be disposed to question the verity of the diagnosis in those cases in which it has been reported that improvement has followed special forms of treatment.

Dr. Zentmayer asked Dr. Shumway whether he had considered the advisability of using the X-rays. He said that recently at the Denver Society, Bane had shown a case where, the diagnosis at first in question, but seemingly confirmed by the course of the case, this method of treatment, while at first unsuccessful, permanently arrested the progress of the disease after an application which produced a severe reaction lasting two weeks.

Dr. Shumway replied that Dr. de Schweinitz had advised against operative interference and that Dr. Zentmayer's suggestion might be adopted.

### A Case of Quinine Blindness.

Dr. de Schweinitz presented a patient with the following history: A man, aged forty years, took, eight months prior to his examination, a large but unknown quantity of sulphate of quinine. Within half an hour, preceded by nausea and vomiting, he became entirely blind and remained in this condition for fourteen hours. At the expiration of this time central vision began to return and was gradually restored, but defective peripheral vision and marked night-blindness continued to be prominent symptoms. Examination eight months after the ingestion of this toxic dose of quinine revealed a visual acuteness of 5/5 of each eye; decided atrophic pallor of each optic disk; very narrow retinal arteries, which in many places, especially near the disks, showed an apparent thickening of the perivascular lymph sheaths; some diminution of the caliber of the retinal veins, more evident in the right than in the left eye; and great contraction of the visual fields to within 10° of the fixation point. Within the narrow fields color perception was accurate; the light-sense, tested with DeWecker's photometric types, was L = 6/10. In addition to the contracted visual fields, there were symmetrical areas in the periphery of each temporal field of preserved vision. The area in the right field was a little larger and in the left field a little smaller than the areas of preserved central visual field.

### Thiersch Graft on the Bulbar Conjunctiva After One Year.

Dr. de Schweinitz exhibited a patient whom he had shown to the section exactly one year ago, upon whose bulbar conjunctiva he had planted a Thiersch graft to cover the defect left after complete excision of a recurrent pterygium. The result of this operation had been entirely successful and the graft had remained firmly in place, with no change except a vascularization of its inner third, so that it closely resembled the surrounding mucous membrane.

### A Case of Osseous Tumor of the Orbit.

Dr. Howard F. Hansell presented the case history of a young woman who presented the usual signs of a growth in the orbit: proptosis down and out, limitation of movement, pain, and diplopia. The pupil was moderately dilated, but responsive. Vision was subject to variations of acuity. A tumor, the character of which could not be determined, could be felt in the upper, inner angle of the orbit. It was thought to be sarcoma from the frequency of this form of tumor in this situation, and immediate operation was advised. Through an incision below the brow and dissection of underlying tissues a round, bony growth, the shape and size of a horse chestnut and attached by a pedicle to the underlying bone, was uncovered and by means of a chisel and mallet removed. Recovery was complete in a few days. Three months later the exophthalmus had disappeared, movements in all directions, except in those controlled by the superior oblique muscle, this muscle having been divided at the time of operation, were restored. Diplopia, in the lower outer part of the field only, remained, and was easily and unconsciously overcome by compensatory position of the head. The patient had had chronic catarrh for many years. Perforation through the ethmoid plate had led to chronic periostitis, and the gradual deposit under the periosteum of bone cells had eventually assumed the proportions of a tumor.

### Optic Atrophy Following Neuroretinitis the Result of Chlorosis.

Dr. Wm. Campbell Posey exhibited a young Hebrew girl with moderate optic atrophy in both eyes. He had reported the case in July last before the American Ophthalmological Society as an instance of intense neuroretinitis as a consequence of chlorosis, the blood at the height of the neuritis showing 65 per cent. hemoglobin. The patient had rapidly improved under iron, and the vision, which had equalled counting fingers at one foot in the right eye and 6/12 in the left, rose in a few months to 6/60 in the right and 6/9 in the left eye. At this time, about six months after the inception of the ocular process, there is surprisingly slight optic atrophy, and uncorrected vision equals 5/9 in each eye. In addition to the atrophy of the nerve, there is considerable chorioidal and retinal disturbance between the macula and the disk in the right eye.

Dr. Zentmayer asked Dr. Posey whether there were much headache or other symptoms of increased intracranial pressure, as he thought the nerve head had more the appearance of a papilledema due to that cause than had the first case. This might be explained by an edema of the brain secondary to the anemia.

Dr. de Schweinitz regarded the result in Dr. Posey's patient as an extremely interesting and important one from the therapeutic standpoint; but called attention to the fact that the disappearance of an optic neuritis or papilledema under the apparent influence of the administration of iron and its preparations did not necessarily prove that the optic nerve lesion had been due to the anemia. It was possible that the choked disk or optic neuritis might in some of these patients be attributable to an intracranial tuberculous process, and the anemia be a secondary one. During the period of iron administration the tuberculous process might grow less active or subside, the intracranial pressure diminish, and the nerve-head swelling disappear. This improvement of tuberculous lesions as a result of the exhibition of iron, Dr. Stengel had pointd out, occurred in other portions of the body, and might, therefore, take place in the brain, or its membranes. Nevertheless, Dr. Posey's admirable result indicated strongly how carefully the study of optic nerve lesions should be made before resorting to radical, especially operative, measures for their relief.

Dr. Posey, in reply, stated that the patient had not suffered from any severe headaches.

Dr. Emory Hall (by invitation) said that the signs elicited at the apex of the right lung were suspicious, but not sufficient to warrant a diagnosis of tuberculosis.

### Tubercle of the Ciliary Body.

Dr. Posey also exhibited a case of probable tubercle of the ciliary body in a male negro, aged forty years. The patient had always been healthy, but confessed to several attacks of gonorrhea. He denied a specific sore. There was no family history of tuberculosis, and a physical examination of the patient revealed no evidence of the disease elsewhere in his system. The left eye, the seat of the disease, was moderately injected. The cornea was steamy in the interstitial lamellæ below, the opacity being triangular in form and made up of a series of grayish-white rounded and crescentic areas, not unlike the typical deposits of descemetitis. The iris was thickened, and the pupil irregularly dilated from the atropine which had been used, owing to the adhesion of the iris with a large grayish-yellow mass which projected into the pupillary area from behind the iris. The mass was avascular, but was covered in places by iris pigment, which had remained adherent to it as the synechia gave way. Tension was normal. Von Pirquet test showed a local reaction. The temperature rose to 101° after the test, but this was considered of no importance, as the temperature had been 100° on admission.

Dr. Hansell thought the difficulty of diagnosis from the clinical signs was sometimes great, for the resemblance between tubercles and gummata in their early stages was misleading. A patient recently admitted to the Jefferson Hospital for tuberculous iritis, with the supposed characteristic multiple little tumors, was relieved entirely of the ocular symptoms and total disappearance of the tumors in a few days by mercurial inunctions, potassium idodide, and sweat baths, in addition to the usual local remedies.

Dr. Posey, closing, said that he thought it was often possible to differentiate tubercle and gumma of the iris clinically, a grayish-white and avascular nodule being usually a tubercle, while a yellowish vascular one was a gumma.

### Unusual Form of Congenital Cataract.

Dr. Zentmayer presented a patient, aged forty-three years, with a pecular type of congenital cataract. In the lens of each eye there is an irregular, disk-like, grayish-white opacity with a pin-head-sized central white dot above and to the inner side of the center of the pupil at a deeper level than the iris plane. This is surrounded by a grayish mottled opacity. Under mydriasis the surrounding opacity is seen to extend almost to the equator of the lens. The latter is very thin and highly refracting, appearing as a fine silver line. The whole shrunken lens is dislocated upward and inward. In the L. E. the opacity is not so deeply placed and the luxation is not so great. V. R. E. = 1½/L X., L. E. = ½/L X.

The L. E. was operated upon because of the poorer vision. With a knife needle the opaque disk was picked off and fell into the posterior chamber. No marked improvement in vision following this, a discission was later done. An intense iridocyclitis was set up, which persisted for six weeks. There was no improvement in vision.

Dr. Zentmayer classed the case with those cases of congenital cataract due to a faulty development of the nucleus of the lens (Collins). In section these lenses are seen to be flattened anteroposteriorly. There is a round mass on either side connected by a band. In the central flattest part of the lens a laminated mass is situated, similar to anterior polar cataract. It extends back to the posterior capsule, no lens substance intervening. Surrounding this there is lens matter.

Dr. Turner asked Dr. Zentmayer whether the cataractous tissue was hard to cut, and whether the use of a keratome and evacuation of the lens material would not be preferable to an iridectomy or discission.

Dr. Posey asked what became of the central plug of lens matter after the discission, and wished to know if Dr. Zentmayer thought that this foreign fragment of lens matter had occasioned the irritation which was present after the operation.

Dr. Zentmayer, in reply, said there was very little cortical matter present and that the disk-like plug fell behind the iris; but he did not regard it responsible for the iridocyclitis.

### Detachment of the Retina.

Dr. McCluney Radcliffe presented for study a boy, aged eight years, who had been sent to him at the Wills Hospital the previous day with a history of blindness of the right eye of several weeks' duration.

There was no history of injury or disease. Examination of eye showed the cornea to be normal, iris discolored, pupil 4 mm. and faintly reactive, but it dilated regularly.

A bright-red membrane completely obscured the fundus. The upper temporal portion of the membrane was comparatively free and waved on movement of the eyeball. The extreme lower nasal quadrant of the membrane was of a dull gray color.

There were no blood vessels on the membrane, but several minute white lines extended partly across it.

The hemorrhage seemed to have penetrated the stroma of the membrane, but had not passed through it, as there was no blood anterior to it.

The tension was slightly lowered. The tentative diagnosis was detachment of the retina, probably the result of hemorrhage. The left eye was normal. Vision of O. S. with correcting lenses = 20/20.

Dr. Posey stated that he had had an opportunity of studying the case with Dr. Radcliffe, and thought that the simplest explanation of the condition was that the patient had suffered a previous trauma, which he had forgotten, as a consequence of which the retina became detached, and that the red appearance was the result of hemorrhages which had subsequently occurred into the retina. Since his attention had been called to the fact that the funnel-shaped depression which is seen in cases of detached retina seemed to be absent in this case, he was rather inclined to believe that it might be that the membrane was not the retina, unless, indeed, the temporal half, which floated about so freely, had fallen over upon the nasal portion and obscured the depression of the funnel created by the insertion of the retina round about the optic nerve. He thought the discoloration of the iris indicated that the condition had been present for at least some months, while the somewhat lowered tension might be regarded as evidence against the presence of a neoplasm. He had never seen another case presenting exactly the same conditions.

Dr. Shumway said that in making a differential diagnosis the condition of so-called "pseudoglioma" should be considered as a possibility. The membrane floating behind the lens, which was evidently the result of a recent hemorrhage, effectually concealed the interior of the eye, except on the nasal side, and the grayish mass in this position suggested the appearance of an organized exudate rather than the detached retina. The age of the child, and the diminished tension of the eyeball, spoke also against intraocular tumor, and in favor of such an exudate.

Dr. Posey said that in opposition to the theory that the condition was one of ordinary pseudoglioma, was the absence of any causal condition which might have occasioned a uveitis. There had been no meningitis or other illness which could have provoked a metastatis, while it seemed scarcely likely that if the condition had arisen in fetal life the child could have attained so advanced an age without giving earlier evidence of the opacity within the eye.

Dr. Zentmayer stated it was not necessary to invoke a traumatism to explain a hemorrhagic origin of such cases, as Mr. Nettleship has shown by microscopic examination that total detachment, with subsequent appearances of pseudoglioma in children after the exanthemata, especially measles, is frequently due to subretinal hemorrhage.

Referring to Dr. Radcliffe's patient, Dr. de Schweinitz said that, subject to correction as the result of an opportunity for more exact examination, the condition might represent membranes which had extended into the vitreous as the result of the metamorphosis of fibrinous exudations or hemorrhages, very much as the same state of affairs arises in the so-called proliferating retinitis. Under such circumstances, as was well known, detachment of the retina, opacity of, and hemorrhage into, the vitreous and on the membranes were often complicating conditions. Dr. de Schweinitz detailed the case history of a patient whose right eye had at one time presented appearances somewhat resembling those in the eye of Dr. Radcliffe's patient, which years later, the eye being entirely quiet, signs of inflammation never having been present, showed in the posterior half of the vitreous dense masses of bluish-white or white color. Dr. de Schweinitz agreed with previous speakers that the presence of a new growth was unlikely.

### Preretinal Hemorrhage.

Dr. James Thorington presented a patient, aged thirty years, who was first seen by him November 20, one-half hour after his right eye had become almost blind from intraocular hemorrhage. Previous to this occurrence each eye had enjoyed normal vision, so far as he knew.

The left eye was perfectly normal, but the right fundus showed an unusually large subhyaloid hemorrhage, which occupied the entire macular region and extended upon the temporal half of the disk. Dr. Thorington referred to the fact that this condition was most apt to occur in myopic eyes or in eyes with vascular changes. In his patient, however, the eyes were not myopic, and the condition had not developed as the result of trauma. The patient had been sleeping for an hour just previous to the onset of the hemorrhage. Manifestations elsewhere in the economy prompted the vigorous use of mercury and iodides.

The ocular conditions had improved, likewise the patient's general condition.

### Unusual Vascular Changes in the Retinal Vessels Associated With Degenerative Areas Resembling Those Seen in Retinitis Circinata.

Drs. G. E. de Schweinitz and T. B. Holloway reported the case histories of two patients, aged nineteen and twenty years, who presented strikingly similar unilateral ocular manifestations. In each case there was distinct inequality in the caliber of the vessels, with aneurysmal dilatations mostly confined to the finer arterial twigs. These changes were associated with small free hemorrhages and whitish areas of degeneration, probably due to fatty changes, and resembling those seen in retinitis circinata. In both cases these areas formed an incomplete ring at the posterior pole of the eye, while in the one case similar irregular patches could also be seen in the periphery of the temporal portions of the fundus.

In each case there was some intestinal disturbance and suspicious signs at the apex of the right lung.

T. B. Holloway,
*Clerk.*

# JOINT MEETING OF THE CHICAGO OPHTHALMOLOGICAL AND CHICAGO NEUROLOGICAL SOCIETIES.

Meeting of November 8, 1909. Drs. Frank Allport and L. Harrison Mettler, Presidents.

### Neurologic Diagnoses Based on Eye Symptoms.

Dr. Henry Gradle opened a discussion on this subject. He stated that the eye is so commonly involved in a variety of nervous diseases that in most cases no definite conclusions can be based upon this inconstant relationship. There are, however, some instances in which the eye findings, if carefully analyzed, and, especially when multiple, suggest with strong probability certain nervous diseases, even if other manifestations are as yet not present. As illustrations, he mentioned, among others, the following: One-sided pupillary contraction with mobility, narrowness of the lid aperture and increased vascularity in paresis of the cervical sympathetic. One-sided pupillary dilatation and immobility without other involvement of the third nerve in cerebral syphilis. Pupillary inequality in various psychosis. Bilateral pupillary rigidity, usually with miosis, in general paresis or tabes. Sudden paralysis of the accommodation with normal pupil in postdiphtheritic nerve disease. Bilateral optic neuritis, especially in the form of choked disk, strongly but not absolutely indicative of a brain tumor or other intracranial lesions with increased pressure, but only if not of self-limited duration. Bilateral neuritis without choked disk and of unequal intensity in the two eyes, indicative of meningeal disease. One-sided neuritis is much more likely due to some infection or intoxication than to brain disease. Retrobulbar neuritis, if double-sided and acute—less so if one-sided—suggests disseminated sclerosis; if chronic, intoxication by alcohol, tobacco or diabetes toxins. Retrobulbar neuritis may also be caused by nasal sinus disease. Double-sided, progressive optic atrophy, especially with normal field of vision, strongly suggestive of tabes; in cerebral syphilis the atrophy is more apt to be asymmetric in the two nerves. It is always asymmetric and rarely complete in disseminate sclerosis and apt to lead to irregular fields or scotomata. Tumors of the hypophysis must be diagnosed when bilateral atrophy occurs with hemianopic defects.

Dr. Hugh T. Patrick stated that some ophthalmologists would be rather surprised to learn how much some neurologists know about certain diseases of the eye. With regard to the Argyll-Robertson pupil, one thing, he said, is exceedingly interesting. While in Paris, Babinski showed him two patients who had this pupil. The test was a poor one. An ordinary wax taper was used for illumination, and a reaction to this test was considered positive. Both patients responded to the test, but on bandaging the eyes for half an hour, they responded very nicely to the same degree of illumination. Babinski had no explanation to make other than that it might be a retinal reaction.

Under the list of conditions in which one sees a dilated pupil which does not respond to light, Dr. Patrick included hysteria. He has seen two such cases, and similar ones have been seen by others. He was rather inclined to question the statement that paralysis of accommodation is indubitable evidence of diphtheria, but he believes that it occurs in hysteria. It has been so recorded, and he has seen cases in point. Parinaud has described it as an isolated sign of hysteria. In relation to choked disk, he stated that mention has been made of it now and again, and some neurologists question the entity of such a condition in hysteria. He has seen instances of it, characterized by typical optic neuritis, with moderate swelling, which disappears in time, leaving no trace behind it. It is not due to anema or any disease of any sort. It occurs only at adolescence. The cases he saw in Berlin occurred in young people.

One thing, he said, which had not been mentioned in connection with optic neuritis is that the degree of swelling may be a very valuable indication as to whether a decompression operation shall be done. With a high degree of swelling and other evidence of brain tumor, it is not justifiable to wait for localizing signs or anything else. A decompression operation should be done at once, to save the patient's vision.

He has also been looking for optic neuritis in accessory sinus disease, but has never seen a case. In relation to optic atrophy, he was convinced that he had diagnosed cases of tabes with optic atrophy which he now believes to have been due to hypophyseal tumor. Three are cases of tumor of the hypophysis in which there is optic atrophy, with almost loss of vision and of the deep reflexes and of sexual power. Therefore, one should be exceedingly careful in making a diagnosis of tabes in such cases. He differed with Dr. Gradle with regard to the presence of defects in the visual field in cases of optic atrophy. He has seen cases showing such defects, and he has seen two or three cases of optic atrophy in tabes, in which there was an imperfect homonymous hemianopsia. There was an irregular piece out of the field, fairly symmetrical in both eyes. In another case there was a reentrant defect. In another case the corner was cut off from the field. These three defects occurred in cases of tabes with optic atrophy. He saw two cases, both women, in which he is convinced he should have made a diagnosis of hypophysis tumor, except that the visual defect was distinctly a central scotoma. He has since learned that this also occurs in hypophysis tumor. The typical hemianopsia of chiasm disease is not necessarily that of hypophysis disease. He saw a case recently in which there was a retrobulbar neuritis, caused by excessive use of alcohol, in which there was a central scotoma. The patient developed a beautiful multiple neuritis of the toxic type, and a diagnosis of tabes had been made, although it was not that.

Dr. Patrick endorsed what Dr. Gradle said about the Wernicke sign. Negatively, it is of little value. Positively, it is quite valuable. He is convinced that in some cases in which he did not find the Wernicke sign the lesion was behind the corpora quadrigemina. Where discovered, it was of assistance in localizing the lesion. He has seen two cases of bilateral lesion of the occipital lobe, and in neither case was the patient entirely blind. He believes that hemianopic defects of the visual field generally indicate disease in the occipital lobes. Vertical hemianopsia, which is exceedingly rare, is practically always due to occipital disease, and if, with a more or less marked vertical hemianopsia there is a lack of, or great interference with the sense of orientation, the lesion is probably in the rostrum of the corpus callosum. He has had one such case. The man could not see below, nor could he remember his way. After he passed his front gate, in a small village, where he knew every crook and turn and house, he was lost. In his own house, if he laid down on a couch, when he got up he could not find his way into the bedroom.

Another thing, is a sudden transient amaurosis, usually unilateral, possibly bilateral, which certainly is caused by multiple sclerosis. This blindness usually disappears in the course of a few days or weeks.

Scintillating scotoma may be due not only to migraine, but to occipital brain tumor of the hemianopic type.

Dr. N. M. Black exhibited some charts showing inversion or interlacing of the visual fields in increased intracranial tension and also in a case of brain tumor. The latter occurred in a boy, nine years of age, on whom a decompression operation was performed, with excellent results. His fields are now normal.

Dr. D'Orsay Hecht thought that probably greater refinement in diagnosis with reference to the eye will probably eliminate a field that has hitherto been rather obscure. He had an experience quite recently with a case of optic neuritis due to toxemia. The patient gave every evidence of an incipient brain tumor, with a choked disk in one eye, of the highest degree. The patient was nursing a five months' infant; her symptoms had existed for three months. There was also a transient glycosuria, which disappeared under treatment, as did also the optic neuritis, for which there was substituted the picture of a partial optic atrophy. He concluded, therefore, that this was not a case of brain tumor, but probably one of lactation optic neuritis. The particular point of interest in the case was whether it could be interpreted as a case in which the hypophysis was at fault, because it has been suggested that during pregnancy the hypophysis becomes hypertrophied, giving rise to the symptoms mentioned. He was inclined to believe that this was not a case of lactation toxemia, but one of derangement of hypophysis function.

Dr. Julius Grinker has seen a number of cases of multiple sclerosis, but has failed to find one case that showed optic neuritis. He has seen a number of cases with optic atrophy. This observation has been confirmed by others, that optic atrophy is common, while optic neuritis is rare. In hypophysis tumor there is occasionally a loss of the reflexes, and where the optic atrophy is complete, not merely bitemporal hemianopsia, with loss of reflexes, the diagnosis of tabes is apt to be made. In a case seen about two or three years ago, while examining the patient, he felt certain that it was a case of tabes, but before he completed the examination he changed the diagnosis to tumor of the hypophysis.

With reference to scintillating scotoma, when it is present, one should think of migraine as well as of occipital tumor. In one case under his observation, a neurologist was led to think seriously of brain tumor, specific in nature, and the patient was put through a course of antispecific treatment. The treatment proved ineffective. The history of headaches following the scintillating scotoma, with headaches on the opposite side, led Dr. Grinker to make a diagnosis of migraine, which has since been proved to be correct.

Dr. Sydney Kuh asked Dr. Gradle about the significance of an irregular outline of the pupil in an eye which is not the seat of any local disease. When this symptom was first described, it was thought to be absolutely pathognomonic of syphilis. That view has since been refuted, and the symptom is now considered to be merely suspicious of syphilis, a belief in which Dr. Kuh concurs.

Dr. E. V. L. Brown called attention to an article which appeared in a French journal, describing a case in which there was a sectiform atrophy of the pupil in tabes.

Dr. Peter Bassoe, in the case of a young girl who during her lifetime had had hysteria with optic neuritis, congenital optic atrophy and marked visual defect, found at the postmortem a huge lesion in the optic chiasm, which cut off all the medullary fibers in the beginning of the optic nerve. That, he thought, was one case of multiple sclerosis in which the first ophthalmoscopic finding was an optic neuritis.

Dr. Hugh T. Patrick referred to a recent paper by Dr. Harvey Cushing, in which he reported cases of tumors in various locations, but not involving the visual tract especially. In some of these cases the interlacing of the fields was present when there was little or no optic neuritis. Sachs examined five cases of brain tumor, in which he found interlacing of the fields present, either in all or in four of the cases. Bordelais really did this work first and is deserving of all credit.

Dr. Gradle (closing) emphasized that it is essential for neurologists to use the proper method of pupillary examination and to make sure that any existing pupillary defect is not due to any condition in the eye, or to any error in refraction. If the patient does not face the source of light directly, but is at an angle to it, the less illuminated pupil will sometimes appear a little larger than the directly illuminated pupil. It is best to examine pupils first in daylight, to which the patient is accustomed, and then by means of artificial light. The best way is to have an Argand burner in a fairly dark room, turning it down completely. Watch the pupil in dim light, then suddenly turn on the full glare of light, preferably with a condenser. In that way one is almost sure to get a reaction. It is well known that the retina becomes more sensitive after being excluded from daylight for a while.

The object of his paper, he said, was not to state that there are many eye symptoms in nervous diseases, but to emphasize particularly that certain eye symptoms are strictly indicative of certain nervous diseases. Thus, in tabes, if the visual defect is irregular field of vision, one cannot make a diagnosis of tabes, but must say "not proven." If there is a progressive atrophy, nearly symmetrical, in both eyes, without constriction of the visual field, one can say with certainty that it is a case of incipient tabes, even if there are no other symptoms present and all reflexes are positive.

As to optic neuritis in sclerosis, he called attention to the writings of Uthoff, in the Graefe-Saemisch Handbuch of Ophthalmology, not yet completed. Uthoff gathered statistics as to the frequency of certain eye symptoms in certain nervous diseases. He found that in sclerosis, eye symptoms are present in more than half the cases, but the probability is that if the cases were followed from beginning to end, eye defects would be found to occur, at one time or another, in more than fifty per cent of the cases. Optic neuritis is one of the rarer indications of sclerosis. It occurs in about five per cent of the cases, while retrobulbar neuritis, not visible with the ophthalmoscope, is more common, and quite common, too, is partial optic atrophy.

Amblyopia and amaurosis in diffuse sclerosis might be mistaken for hysteria, when the intracranial portion of one optic nerve is involved by a sclerotic patch. As all earlier sclerotic foci are not necessarily permanent, very marked recoveries are seen in such cases.

Regarding the irregularity of the pupil, due to partial paresis, he said, it has been observed in other instances besides syphilis; certainly in tabes, although here it might be a question whether it is postsyphilitic. It has been observed in various cases of Argyll-Robertson pupil.

### Migraine.

Dr. Sydney Kuh read a paper on this subject. He called attention to the necessity of distinguishing between idiopathic and symptomatic migraine, of which only the former was to be considered in this paper. The disease usually begins early in life, before the twentieth year. Heredity is by far the most important etiological factor. Gout may be considered of no importance, eye strain as merely an exciting cause in rare instances. Among other exciting causes, attention was called to the peculiar influence of very profound and unusually long sleep. A brief description of the prodromal stage and aura was followed by an enumeration of the symptoms of the attack proper. He reported a brief attack of complete motor aphasia in one of his cases, an unusual abdominal sensation observed in himself during the attack, which he was inclined to attribute to an absence of the normal peristaltic movements of the bowels, referred to the hypothermia seen by several authors and the lymphocytosis reported by Russow. Mental disturbances are rare phenomena. Occasionally a severe intercurrent disease seemed to deteriorate the attacks of hemicrania, as does sometimes the menopause.

The disease usually lasts the greater part of the life, rarely produces really grave results. Treatment often brings amelioration. A case was mentioned in which migraine was associated with exophthalmic goitre and in which, with the subsiding of the symptoms of the latter, the attacks of the former ceased. Several hygienic and dietary measures were discussed. The bromides had been disappointing in the hands of the author, the salicylates and coal-tar anodynes satisfactory as palliative measures; cannabis indica had proved to be the most valuable in many cases. The beneficial influence of mental exertion during milder attacks were emphasized.

The pathogenesis of the disease is unknown. Many strong arguments can be advanced in favor of the theory that an autointoxication is responsible for the symptoms. The author does not believe that migraine is a manifestation of epilepsy.

Dr. Frank Brawley disagreed that ophthalmologists in general entertained the belief that eye strain is a cause of migraine. Dr. Casey Wood collected the opinions of the majority of ophthalmologists in this country, and his findings show that the general opinion is that five per cent of cases were cured by proper correction of refractive errors, fifteen per cent were relieved, and a few men claimed that ninety to ninety-five per cent. of cases could be cured by treatment of the eye. Personally, he has never seen a case that was cured by any local treatment of the eye. He has seen cases where relief was afforded, the number of attacks being lessened, but not a complete cure. Fuchs, he said, considers migraine an angioneurosis, somewhat similar to fainting. It is odd, however, that the vasomoter disturbance occurs practically always in the same areas of the brain. Of course, each case varies to a certain extent during each attack.

Gowers believes that the condition is caused by a morbid state of the nerve cells. Therefore vomiting gives relief, the vomiting being a nervous discharge. The common belief regarding the effect of eye strain as a cause of migraine, he thought, was undoubtedly the result of the publications of some of the more enthusiastic neurologists.

Dr. Harold N. Moyer stated that he had never cured a case of migraine, although he had helped many patients. By means of proper hygienic measures, patients have had their attacks mitigated, but a cure has never been effected. Eye strain, he said, does not play any part in the production of migraine, and yet some ophthalmologists claim that they cure migraine by fitting glasses. He has not seen one case that it even helped. He has had patients with well-defined eye-strain headaches associated and complicated with migraine. With proper refraction these patients have been relieved of their eye-strain headaches, but they have their migraine headaches at regular intervals.

Dr. George F. Suker, who is a sufferer from migraine, gets much relief from a good cigar, or several of them. It is the only thing that will give him any relief. As to refraction curing migraine, he does not believe that a true migrainous patient has ever been cured, or even relieved, by the correction of a refraction error. He has tried everything in his own case, but without avail.

He has observed that the disease is transmissible. It was transmitted to him by his mother, and to her by her father. He has frequently noted that the disease is transmitted from father to daughter and from mother to son. He regards the symptoms as of toxic origin. The scintillating scotomas, the hemianopsia and the twitching of the lids seemed to be an involvement of the third, fifth and seventh nerves, of the toxic variety, with unilateral tendencies. The reading of a book or some task that will cause the sufferer to forget himself will usually give some relief.

Dr. William H. Wilder recalled the time when the view was held and maintained by medical men generally that refractive errors were the cause of migraine, and that the relief of such errors would cure the migraine. It has been his observation that migraine can very rarely be relieved by the correction of any error of refraction, even in the more severe cases, where there are distinct ophthalmic symptoms. The ophthalmologist, he thought, frequently sees a type of this disease which is very much less pronounced than the classic picture presented by Dr. Kuh. The great majority of the cases of migraine are cases of migrainous headaches. Some of the symptoms are pronounced, others are not. These cases can be benefited. If refractive errors exist, they must be corrected, and he knows positively that he has benefited some cases of migraine. Where the astigmatism is oblique, it is difficult for the muscles to adjust themselvees, but these cases are few and far between. The opinion of men most careful in their observations will be that a very limited number of these cases will be benefited by treatment. In many cases of migrainous headache, muscular imbalance plays a very limited role. It will often disappear. He believes that there are cases of migraine where, when an astigmatism of considerable degree was relieved, the attacks became less frequent and less severe.

Dr. Gradle wanted to emphasize that, according to his experience, there are instances of periodic headaches, indistinguishable from migraine, which are permanently relieved by the use of glasses. It is a severe headache, which occurs in periodic attacks, sometimes preceded by scotoma and sometimes complicated with nausea. Gradle has records of many cases of this kind, observed for years, that remained free from attacks while they wore glasses. The refractive condition found was mostly a medium degree of astigmatism, relatively often against the rule or with oblique axis. The most striking instances were those in which the migraine-like attacks were limited to the side of the more astigmatic eye or the one with the most deviated axis. Migraine dependent on simple hyperopia has also been observed, although relatively infrequent. Gradle got the impression that the migraine influenced by glasses did not date back as commonly to childhood, and on the other hand was more often intensified by any malnutrition than the headache which was not related to the eyes. Possibly there may be in the case of migraine, as there is in the case of epilepsy, a distinction between the idiopathic disease (of central origin) and a reflex affection clinically similar, but starting from the eye or, as it may happen, the nose or some other organ.

On analyzing his records of a hundred cases of periodic headaches under observation for some time, Gradle found about one-fifth permanently relieved by glasses, about one-third more or less benefited, though sometimes only temporarily, while the rest were either not influenced at all by the optic correction or had normal eyes. His records showed many instances in which glasses relieved the constant or irregular headaches due to eye strain, but did not influence typical migraine attacks in the same patients. He would freely admit that the percentage of migraine cured by glasses, about 20%, is not nearly as large in the average observation of the disease as it was in his selected cases. In the treatment of migraine not dependent on the eyes he has been able to relieve materially and sometimes cure about a quarter to one-third of his patients by the use of cannabis indica. Comparative trials have shown him that there is no preparation on the market with which he could obtain the results as positively as with Herring's extract. He uses from one-sixth to one-quarter of a grain of Herring's solid extract, dissolved in alcohol. This will often check the attacks as well as help to render them less frequent.

Dr. Hugh T. Patrick saw a medical student with a visual trouble which was always uniform. It began with a gradual loss of the right field of the right eye. The obscuration traveled across toward the left eye until the right eye was totally blind. Vision in the left eye was not good. Then the left eye was attacked in exactly the same way, proceeding from the nasal periphery, until he had lost the right field in the left eye; the right eye being completely blind. The blindness traveled across until he was blind in both eyes. Vision returned in exactly the same way. In about twenty minutes he was all right. Then he had his headache. No circulatory disturbance farther back than the retina would account for that.

As to cannabis indica, he has given hundreds of quarts of the fluid extract. Some persons are not helped by it, some are helped a little, and others materially, so that the attacks are reduced in frequency, in severity and in duration. As to the administration of the drug, the variation of personal susceptibility is greater than the variation in preparation. Some preparations are absolutely innocuous. A physiologic or a toxic effect may be obtained with from four to eighty drops, but there is no way of telling beforehand what will happen. He has given five grains of the powdered extract three times a day.

Dr. Julius Grinker found cannabis indica to do very little good in many cases, although some patients consider themselves cured. It certainly is worth trying. The quality of the preparation is important. A manufacturer will put up a good preparation of one kind, and then a poor one at another time. He starts with two drops, working up gradually to the dose that will produce poison. Then he falls back two drops. He does that in every case and every time a new bottle is opened.

As to the relationship between epilepsy and migraine, he believes that such relationship exists, although he does not know what it is. He has seen migraine alternating with epilepsy, and in one instance a good illustration was presented of how a migrainous mother may transmit epilepsy to her child. The occurrence of attacks of migraine after a severe psychic outburst, he thought, puts migraine on a level with epilepsy.

Dr. D'Orsay Hecht has prescribed cannabis indica extensively in migraine, giving as high as ninety drops every four hours. He has also given the powdered extract referred to by Dr. Patrick. He has used cannabis Americana, and has found it to be fully as potential as cannabis indica, with less of its toxic effects.

In the last four months Dr. Schueler, an expert radiographer, in Berlin, exploited a new theory of migraine, with a surgical aspect. He concludes that there is a disproportion between the brain and skull in these cases; that the former is too large for the latter. He advises lumbar puncture or brain puncture. He discovered a certain fissuring on the inner aspect of the skull, showing that the intracranial tension was great. This cannot be explained on any basis other than the existence of an internal hydrocephalus.

Dr. Frank Allport suggested that many of the discrepancies in the literature are due to incorrect diagnoses. Migraine is a term that is used indiscriminately, and wrong diagnoses are made on that basis. Many observers call any kind of a headache migraine, and then claim that they can produce a cure by fitting glasses.

Dr. Kuh (closing) believed that some cases of migraine are relieved by the proper fitting of glasses, and that a large number of these cases in which such wonderful cures are obtained from the fitting of glasses are really cases of hysteria. To say that migraine is an angioneurosis does not bring one any nearer to a solution of the trouble. There is a certain amount of circulatory disturbance in migraine, but what is it?

Dr. Suker's experience he regarded as interesting, because when he wants to be sure of curing an attack of migraine he smokes a strong cigar, showing that the patient, and not the disease, must be treated. The milder, more incomplete forms of migraine are in the majority. He has found cannabis indica to be a most valuable remedy. Personally, he invariably is relieved, or at least succeeds in aborting an attack, by taking one-fourth grain of calomel at the very onset.

As to the relationship between migraine and epilepsy, both are neuroses, occurring in neuropathic families. They are very common, and, therefore, there is nothing remarkable in the fact that epilepsy and migraine occur in the same individual or family, just like epilepsy and hysteria. It is false to claim a more intimate relationship between these two diseases beyond the fact that they are the result of the same neuropathic tendency.

WILLIS O. NANCE,
*Secretary.*

# COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of November 20, 1909, in Denver, Dr. David A. Strickler, presiding.

### Hyalitis.

Dr. W. C. Bane presented a woman of thirty, who had first consulted him two years before on account of pain above the right eye, ciliary tenderness, and vision reduced to 5/30. There was descemetitis, the pupil reacted normally, although the iris was discolored by inflammatory changes, and there were floating vitreous opacities. Thirty minims of the syrup of iodide of iron t. i. d. and 10% dionin daily for a few weeks had been followed by clearing of the cornea and subsidence of the iritic and ciliary disturbance. On November 4, 1909, the patient returned with marked opacity of the vitreous of the right eye, but no other structures previously involved seemed now to be affected. There was no pain, and R. V. = 3/300. In the absence of evidence of sypilitic infection, Dr. Bane considered the etiology obscure.

*Discussion.*—Dr. Neeper noted undue whiteness of the disk and advised examination of the nasal accessory cavities.

Dr. Jackson located the opacity in the interior part of the vitreous, and thought it accounted for the low vision. He doubted if the disk were pale.

Dr. Dickson questioned the specific causation, while Dr. Friedmann believed syphilis to be the etiologic factor.

Dr. Libby referred to a case of double hyalitis which he had seen closely follow influenza. Recovery followed after the use of iodides and dionin for several months. Nasal examination was negative.

### Congenital Pigmentation.

Dr. D. H. Coover showed a white woman of sixty, who had "always had a dark eye," thus referring to her strikingly noticeable negroid sclerotics. In the right eye two-thirds of the iris was deeply pigmented, one-third less so; the fundus was unusually pigmented, and the vision only 2/200. The left eye showed vision of 6/9, and a visual field contracted for green and blue, less so for white. "Rainbow circles" further suggested glaucoma, but the tension and nerve head were normal. The case was shown especially because of the pigmentation.

*Discussion.*—Dr. Jackson had never seen so much pigmentation of the sclerotic in a white person; and said that it was usual to see patches of pigment on the disk, rather than the diffuse pigmentation which Dr. Coover's case showed.

Dr. Dickson had noted pigmented pinguecula in negroes.

### Ectropion.

Dr. Coover also presented an elderly man suffering from ectropion of both lower lids. Ziegler's operation had been done, with benefit to each lid. The right lid had received five punctures with the cautery point, and the left two punctures in four weeks.

*Discussion.*—Dr. Libby reported a case he had lately observed, in which the ectropion had been caused by a large neglected chalazion on the conjunctival side of the lower lid, at its center.

### Glaucoma Secondary to Uveitis.

Dr. Jackson showed a man, aged 64 years, whose left eye had been removed after prolonged inflammation. The right eye became inflamed and painful three months since. Vision reduced to counting fingers at one foot. It presented an old pterygium, extending 4 mm. on the cornea, and fine vessels entered the cornea 2 or 3 mm. above and below. The anterior chamber was very shallow, the whole iris and lens being pushed forward, but no part of the iris in contact with the cornea. Pupil 3 mm. in diameter, irregular, excluded, and almost occluded. Transillumination was good in all directions. When first seen the tension of the eyeball was plus 1; but it varied, now being almost normal. The patient refused any operation unless improvement of vision was certainly promised. Suggestions as to treatment were asked for.

*Discussion.*—Dr. Neeper suggested subconjunctival injections of mild iodide of potassium solution, in the hope of absorbing the pupillary exudate.

Drs. Boyd and Libby advised iridectomy as the operation of choice. Dr. Jackson concurred in this opinion.

### Herpes Zoster Ophthalmicus.

Dr. Coover reported a case showing first a red, watery eye. A bleb had soon appeared, covering the temporal eighth of the cornea, and showing infiltration more marked at the pupillary margin of the bleb. The cornea was anesthetic, and there was plastic iritis, without pain. Atropin was used locally. A general examination revealed carcinoma of the vagina and bladder.

*Discussion.*—Dr. Jackson mentioned a case of herpes of the forehead, the eyelids being closed by swelling, but the eyes showing no external inflammation. The hyperopia was diminished 1 D. and the astigmatism was lessened, indicating involvement of the ciliary body. He believed this disease to be epidemic at times; although he had seen but six or eight fresh cases, and about four old cases.

Dr. Neeper thought he could readily recall fifty cases seen in ten years, the youngest being 23 months. He had seen the blebs on, but not in, the nose. Ten per cent. ichthyol ointment gave him the best results, with the least scarring.

Dr. Magruder had seen a case in which the inferior branch of the nerve was involved. It resembled erysipelas, except that the border was not well defined. There was no fever and no pain. The attack subsided in forty-eight hours under the use of 10% ichthyol ointment.

Dr. Bane spoke of five cases he had previously reported, all of which had been diagnosed as erysipelas.

### Copper Electrode for Trachoma.

Dr. T. A. Dickson of Mobile, Ala., stated that he had treated 25 severe cases of long-standing trachoma by use of the copper electrode, with far better results than he had formerly attained by other methods. In his first case he had given only one treatment, using a current of 15 milliamperes for about eight minutes, until a green deposit from the copper electrode was left on the conjunctival surface of the eyelid. The second eye was similarly treated seven months later. The corneas cleared and the vision became normal. Other cases gave very favorable results, the trachomatous granulations and scar tissue and the pannus yielding to this treatment, and the cornea clearing. With greater experience in the use of the copper electrode, Dr. Dickson now employed a current of

3 to 5 or possibly 8 milliamperes, and used this treatment more frequently than formerly.

*Discussion.*—Dr. Davis had used the copper electrode on two eyes. In one the pannus had cleared entirely; in the other, nearly so. He also mentioned the use of ½ zinc or copper sulphate, by electrolysis.

Dr. Marbourg has seen two corneas clear following the use of glycerole of copper, but conical cornea developed later.

Dr. Coover had treated over 100 cases of all types of trachoma by sandpapering. Only three had returned for a second operation. He said that the secret of success lay in everting the upper lid so that the cul-de-sac was entirely exposed; everting with Darier's forceps, making one or two, or even three, turns, and removing small as well as large granulations. Even with a smooth tarsus, two or three patches of granulation may be found at the fornix, accounting for baffling photophobia, lacrimation and pain.

Dr. Sisson said that if trachoma is caused by protozoa, eradication must come from thorough eversion of the lid, thus reaching each protozoon. He had found the protozoon of Greeff in one case, in the epithelial cells, near the cell nucleus.

### Arcus Senilis.

Dr. Jackson reported the case of a woman of thirty-three with the appearance of a large arcus senilis, extending entirely around each cornea, and possibly due to prolonged vernal conjunctivitis. She had suffered from inflammation of the eyes, worse every spring and summer, for 15 years until the last two years. Her lids were now normal.

*Discussion.*—Dr. Marbourg had observed the same condition follow in a case of a boy affected by vernal conjunctivitis, with pericorneal involvement.

### End Result of Ciliary Wound.

Dr. Boyd reported that a few days after presenting his case of penetrating ciliary wound, at the last meeting, the injured eye became congested, painful and seemed softer. He did a Mule's operation, using the conformer and gold ball. There were adhesions between the scleral scar and the capsule, and the ciliary processes were found to be torn loose. The lens was not discovered.

### High Frequency Current.

Dr. Coover reported a woman with an unsightly puffiness under the eye and also ectropion, due to the injection of paraffin to take out wrinkles. The use of the high frequency current "to the limit" had been followed by almost complete disappearance of the paraffin.

Meeting of December 18, 1909, in Denver, Dr. Melville Black, presiding.

### Lymphangiectasis Conjunctivae.

Dr. G. F. Libby presented a laundress, aged 56, who had first come for examination September 16, 1908, because of an acute toxic conjunctivitis of each eye. She had been using, on her own initiative, a commercial "collyrium," the formula of which is given by its manufacturers as: Boric acid 8 grains, sodium biborate 5 grains, zinc sulphate 1/24 grain, sodium salicylate 1/16 grain, ext. hamamelis dest. et mucilago sassafras aa. 15 minims, aqua laurocerasi et aqua destil. aa. q. s. ad. 1 ounce. Most of the contents of the bottle had formerly been used, with the effect of a soothing collyrium, and it had then been set aside for a while. On the morning in question the solution was used in an eye cup as a douche for both eyes. Immediately intense conjunctival chemosis and swelling of the nasal mucous membrane resulted. Holocain solution, 1:120 and adrenalin chloride, 1:10000 were dropped into the conjunctival sac every two to four hours for ten days. The inflammation had largely subsided in two days, and entirely so in ten. Examination of the remaining contents of the bottle by Dr. Edward C. Hill revealed crystals, epithelium, but no mold. The liquid was slightly cloudy and smelled of soap. Dr. Hill expressed the opinion that the irritation of the conjunctiva and nose was a chemical one, due to the crystals found.

On December 9, 1909, this patient awoke to find the subconjunctival hemorrhage involving the outer half of the globe. On the horizontal meridian, midway between the corneal limbus and the external canthus, the ecchymosis was of a bluish black appearance for a space 5 mm. in diameter, and in the center of this area was a thin cyst, 1x3 mm., filled with a straw-colored fluid. This area was sensitive to pressure and rather painful. When shown before the Society the extravasated blood had been largely absorbed, but the lymph-cyst, containing a minute clot of blood, remained unchanged in size, although somewhat less tender. There was a history of previous subconjunctival hemorrhages, but not with lymph-cysts or pain.

*Discussion.*—Dr. Black had excised a conjunctival lymph-cyst, with resulting obliteration. He spoke of an old man with blood pressure of 95 mm., who had experienced very many subconjunctival hemorrhages, and the same occurrence in a plethoric young woman of full habit with blood pressure of 190 mm.

Dr. Jackson would excise, thus relieving the engorgement of the lymph vessels. He had seen several old people die of cerebral hemorrhage subsequent to subconjunctival ecchymosis, but only one person as young as forty. He thought the condition of the retinal arteries would forecast danger to the brain better than the blood pressure. Subconjunctival hemorrhage was of prognostic import in only about half the cases.

Dr. Coover would have urinalysis made. He had noted, in young people, a blood pressure of 165 to 170 during an attack of migrane, with a drop to 135 to 145 after the headache subsided.

Dr. Ringle spoke of several subconjunctival hemorrhages in a patient with blood pressure of 165, with normal kidneys.

Dr. Marbourg had observed a man of 65 with frequent subconjunctival ecchymoses, in whom death occurred 18 months later.

Dr. Boyd always took the blood pressure in cases of subconjunctival hemorrhage, and had often found diabetes present. He noted an average blood pressure of 110 to 115 in Leadville at an altitude of 10,190 feet.

Dr. Walker had observed conjunctival hemorrhage accompanying whooping cough, constipation and Bright's disease, but had seen no cerebral bleeding associated with it.

Dr. Stevens had seen many cases between 25 and 30 years, the hemorrhage under the conjunctiva having occurred in the night.

Other members had noted this phenomenon, and the rarity of cerebral hemorrhage, as a sequel to subconjunctival ecchymoses.

Dr. Sedwick had noted several subconjunctival ecchymoses in a person, aged 61, who was a heavy consumer of nitrogenous food. Dizziness, to the point of falling, gave added discomfort.

### Obstruction of Central Artery of Retina.

Dr. Black reported a case of obstruction of the central artery of the retina, with resulting blindness. He could evacuate the blood from the arteries by light pressure, and from the veins by firm pressure. In retinal arterio-sclerosis with high blood pressure, he had found decided pressing upon the globe, as from the rubber eraser on a lead pencil, was necessary to produce venous pulse; whereas, with low blood pressure, the venous pulse was produced by pressing lightly, and heavier pressure was required to bring about the arterial pulsation. Dr. Black thought these points of some value in the study of vascular conditions, and asked the members to note and report their observations along these lines.

### Steel in Vitreous.

Dr. Bane reported the removal by the Haab magnet of a triangular piece of steel, about 5 mm. long and 2 mm. wide on its sides, sharply pointed at two ends. It had lodged in the left eye of an adult in the forenoon of December 18th. Attempts at removal with a weaker magnet had failed, but the use of the Haab magnet, with Dr. Walker's assistance, proved successful in the afternoon of the day of injury. The foreign body made a rent about 4 mm. long in both iris and lens. The vision was reduced to fingers at 3 feet, but there was only slight pain, which was increased on bringing the magnet to the eye. During the use of one magnet there was hemorrhage from the upper part of the iris, and from the lower portion while the other was employed, due to the drawing forward of the steel splinter. This also caused a pushing forward of the cornea, by dragging the lens forward. The foreign body was finally brought out through the wound in lens, iris and cornea by aid of the Haab magnet.

*Discussion.*—Dr. Black had successfully managed such cases by iridectomy, washing out lens matter, and then securing the piece of steel by the magnet.

Dr. Walker thought this feasible in cases of old, but not of fresh injury.

### New Stitch Scissors.

Dr. F. R. Spencer exhibited his scissors for removing stitches from conjunctiva or lids. (See description and cut, *Jour. A. M. A.,* November 20, 1909, page 1736.)

Meeting of January 15th, 1910, in Colorado Springs, Dr. James A. Patterson, presiding.

### Binocular Microphthalmos.

Dr. D. H. Coover presented a youth of eighteen with very small globes, clear, well-formed corneas 5½ mm. in diameter, congenital upward coloboma in each iris, congenital cataracts, nystagmus, and normal tension. Dr. Coover had noted no change in the condition in the twelve years the case had been under his notice. He needled one lens in August, 1909, and the same lens again in December, with success. With + 20 spherical lens vision was now about 1/35 in this eye.

*Discussion.*—Dr. Friedmann said that the coloboma was usually situated below, rather than above. He had seen a lens extracted in such a case, the vitreous being fluid. Phthisis bulbi followed.

Dr. Jackson thought the perfectly clear cornea remarkable, and that the ocular defects had probably been intrauterine in origin. He estimated the hyperopia to be 30 to 40 diopters.

### Unusual Macular Appearances.

Dr. E. R. Neeper presented a woman, aged 40, with delicate pigment changes, resembling bone corpuscles in shape, distributed around each macula for a radius of 1½ disk diameters; the pigmentation being more marked in the left eye. Vision, however, was 20/20 in each eye. There was a history of nervous instability, with paralysis of the vocal cords at one time. Dr. H. B. Young of Burlington, Iowa, had noted no fundus trouble in examining this patient in July, 1900.

*Discussion.*—Dr. Jackson thought the macular changes were probably congenital.

Dr. Coover considered the condition the result of an old central chorioiditis.

Dr. Patterson had the impression that it was an old retinochorioiditis, slowly progressing. He had lately seen such a case, ten years subsequent to the fundus disturbance, in which there was slight diminution of vision, and halos suggestive of glaucoma.

### Annular Pigmentation of Nerve Head.

A healthy woman of twenty was shown by Dr. Neeper. She had complained of an unusual amount of "burning back of the eyes." R. V. = 20/20 — 2 letters. L. V. = 20/40. The vision was raised to normal by lenses, and the asthenopia was soon relieved. Ophthalmoscopically, the left disk showed a complete and very distinct ring of pigment, obscuring the outer fourth of its face. The same was true of the right disk, but in a markedly less degree. The eye grounds showed, more or less uniformly, marked evidence of old inflammation, but were free from unusual pigmentation. The vessels were tortuous with venous and arterial calibre well balanced, and the blood pressure was 110 mm.

*Discussion.*—Dr. Sedwick had recently seen quite extensive central pigmentation of the disk.

Dr. Sisson called attention to Parsons' two reported cases of pigmentation extending onto the disk.

Dr. Jackson considered the case presented to be congenital pseudo-neuritis, with the center of the disk elevated 2 mm., and the fundus unusually stippled. He thought the pigmentation marked and worthy of reproduction in a colored plate.

### Retinochorioiditis Juxta Papillaris.

Dr. J. A. Patterson showed a railroad employé, who had first consulted him December 12th, 1899, on account of eye strain. Correcting lenses gave vision of 5/6 + in each eye. He had slight internal strabismus of the left eye. That eye had a normal fundus, excepting that the fovea was crater-shaped, with a honeycombed bottom, and midway between it and the nerve there were three small spots of chorioidal pigment, with no chorioidal atrophy. The patient attributed his poor eyesight to measles when 4 or 5 years of age. He was not again seen until Decembere 27th, 1909, when R. V. with correction = 5/15, L. V. = 5/30. The retinal veins were somewhat contracted and very wavy in both eyes. The right macula was filled with pigment, which extended in a series of patches down and out. The pigment was heaped, but was under the retinal vessels, and there appeared to be little chorioidal absorption underneath these patches. In the left eye there was an area along the superior temporal vessel, with two large and one small pigment spots upon it, and there was pigment heaping around the macula. Subsequently it was found that two instillations of 1% homatropin induced slight increase of tension in the right eye, that the pupil remained large, and did not become normally contracted in two days. Eserin ¼% was then used, the tension soon dropping to normal.

Dr. Patterson thought this case had many characteristics of the retinochorioiditis juxta papillaris of Edmund-Jensen (Ophthalmic Y. B. 1909). The location of the patch in the left eye was characteristic. The notching of the field for red was almost identical with the illustration in the year book. The absolute scotoma for form covered the same area as the red, but was broader and more irregular at the fixation point. Neither the scotoma for form nor that for color extended to the periphery of the field. It must, however, be remembered that in Cunningham's case the scotoma did not extend to the periphery.

*Discussion.*—Dr. Jackson thought the classification reasonable; that the condition was old, and due possibly to measles during childhood or possibly to syphilis. As corneal opacities clearing in childhood, sometimes reappear in old age, so might retinal disturbances.

### Xanthoma.

Dr. Patterson also presented Mrs. H., who had suffered from this discoloration for several years. The spots were symmetrically disposed, appearing over each inner canthus and along the upper and lower lid. They appeared as slightly elevated, butter-yellow, ovoid patches. Dr. Dougherty, of Philadelphia, had removed a patch from the left eyelid about two years before, which returned. Considering the return of these patches almost certain after excision, and no other satisfactory method being then known to Dr. Patterson, he corresponded with Dr. Foerster, a dermatologist in Milwaukee, concerning their treatment. At his suggestion, between February 3 and April 28, 1908, eight applications were made of carbon dioxid snow, the duration of the applications as well as the amount of pressure exerted being greatly increased over the directions given by Dr. W. A. Pusey. That this necessity was due to Colorado altitude was possible. Great improvement resulted; there had been so far no return, although the largest patch on the lower right lid still showed somewhat; but part of this discoloration was believed to be scar tissue.

*Discussion.*—Dr. Coover referred to the use of chromic acid for relief of xanthoma.

Dr. Neeper had used the electrocautery many times, with only one relapse; and believed all discoloration could be thus removed, with practically no resulting scar tissue. As a local anesthetic he injected a mixture of 5 drops of 1% holocain, 3 drops of 5% cocain and 3 drops of 1:1000 adrenalin chlorid.

Dr. Friedmann said that in a large percentage of these cases a condition of cutis laxa was present. He believed the spots of discoloration could be dissected out, with no appreciable scar and without recurrence. He also thought some of the relaxed skin could be excised with advantage.

### Ciliary Wound: Result After One Year.

Dr. Patterson again showed a negress, aged 41, first presented to this Society in January, 1909. The patient had suffered from puncture of the left eye at that time. The point of a hat pin passed through the cornea, penetrated the anterior chamber, nicked the lens capsule and emerged over the ciliary body, which it traversed. When first seen, three days after the accident, it was deemed advisable to excise protruding iris. This case was again shown to illustrate the tolerance, at times, of the ciliary body to injury. The eye had remained quiet for a year, and there was no increase of the lens opacity.

### Simplicity of International Standard for Visual Acuity.

Dr. Jackson called attention to the action of the International Ophthalmological Congress at Naples, in adopting almost unanimously the report recommending as the standard test for vision, the incomplete ring, of such size that the diameter of the ring subtends an angle of five minutes, the width of the ring being one-fifth its diameter, and the break in the ring the same as its width.

The test is based on the principle of the "minimum separabile," the correct basis for practical tests of visual acuity. Vision is measured, not by the size of the object seen, but by the distance by which two points must be separated to be seen as separate points, as compared with their distance from the observer; that is, the angle of their separation. The apparent size of the brightest fixed star in the heavens and that of one just visible to the naked eye, is the same; either, when magnified by the strongest telescope, remains a simple point. But if two stars are close together, whether they be bright or faint, their images must be separated by an angle approximating one minute, before they will be seen as separate stars. This principle was first enunciated by Robert Hooke, who used two black squares on a white ground, each square subtending the angle of one minute, and the two separated by a white space also subtending an angle of one minute. Just 236 years ago to-night, January 15, 1674, Hooke presented to the Royal Society of London a scale, each division of which subtended the angle of one minute, and demonstrated that no one present could distinguish the divisions when made to subtend a smaller angle.

The incomplete ring, the person tested being required to indicate in which direction it is incomplete, is an exact and extremely simple application of this principle. Its simplicity gives it peculiar value. It places on an equality people of all nations, literate and illiterate, and of different grades of mental development. It serves as a standard with which other figures may be compared. If the other figures are just recognizable at the same distance as the break in the ring, they can be used to test vision. The International Committee has recommended certain forms of the Arabic numerals, 1, 4, 7, and 0, as conforming to this standard. But there seems to be no reason why many other figures and letters might not be standardized in the same way and adapted to practical use.

The broken ring itself seems peculiarly adaptable to certain purposes of vision-testing, especially for use by teachers in testing the sight of pupils in the schools, and for testing the vision of employés in transportation services. The break can be turned up or down, to right or left, or half way between these positions. Theoretically it might be turned in ten wholly different directions. But practically the positions differing from each other by angles of 45 degrees are sufficient, and very easy to designate, either by words or by a gesture of the hand.

A series of these rings, arranged symmetrically on a square card, can be turned with either side up, so that practically it serves as four distinct test cards; and it can be so readily changed that the person tested has only one chance in four of guessing which arrangement of the rings is presented to him. A single broken ring printed at the center of a circular card can be turned in any desired direction, and the patient has but one chance in ten of guessing correctly. On account of this ready variability the danger of the person to be tested having learned the test is wholly eliminated. A circular card two inches in diameter, with a broken ring on each side, furnishes an absolutely accurate scientific test for vision, that can be carried in the pocket and used anywhere at the bedside.

*Discussion.*—Dr. Strickler considered this test a practical and simple one to ascertain the acuteness of vision.

Dr. Marbourg said that it would avoid the memorizing of the test letters, and would be of use in the detection of malingering, in connection with the red and green glass disks.

Dr. Neeper thought the incomplete ring was better than letters for testing the vision of railway and other corporation employés. When letters were used he advised having the patient pick out a designated letter, and then differentiate the distinctness of that letter with the different lenses tried.

Dr. Coover believed the incomplete ring a good test for certain grades, but that it would consume much time.

Dr. Boyd thought the test an easy one for a child to understand.

Dr. Jackson would let the children get familiar with the card by seeing it often.

Dr. Magruder would use the reduced incomplete ring at shorter range.

Dr. Friedmann thought the test proposed was most ingenious, simple and of universal use, and especially commended the incomplete ring on a circular card.

Dr. Libby called attention to the difficulty of testing the sight of children between 6 and 8 or 9 years of age, with the test letters, because school children were now taught words instead of letters. He would find a welcome solution of this difficulty in the use of the incomplete ring, which he thought an improvement on the E-shaped figures of the test card for illiterates.

GEORGE F. LIBBY,
*Secretary.*

## BOOK REVIEW.

### Ophthalmic Surgery.

By Charles H. Beard, M. D., Chicago. Published by P. Blakiston's Son and Company, Philadelphia. Price, $5.00.

This is one of the best and most useful publications which ophthalmology has received for some time, and one which seems to bear the imprint of personal experience and individual work. There was need for a comprehensive treatise on ophthalmic surgery based on its practice in this country, and Dr. Beard has done exceptionally well in bringing before his readers such clear and well-chosen descriptions of tried and practical operative procedures.

The arrangement is good, and of special interest and value is a detailed description, in one of the early chapters, of instruments and their management. Many practical points concerning the instruments used in ophthalmic surgery are given in this chapter, and the chapter is one well worth reading, not only for the surgeon, but for the instrument maker as well.

Commencing with Chapter III, practically all operations pertaining to ophthalmology are systematically considered. The indications, contraindications, accidents liable to happen during or after operations, and the operative technic are carefully given.

A sufficient number of the methods directed toward the same end are given, with the advantages and disadvantages of each, to allow the student or beginner a desirable choice of procedure for his individual case. Dr. Beard has not asked his readers to accept *his* method or his selected method as the *only* method, but has established, in so far as possible, a safe standard, with equally safe alternatives.

In Chapter XI, a full account of the "Indian" method of cataract extraction is interesting. After a pertinent and somewhat pointed analysis of the procedure, the author concludes with this paragraph:

"When the time arrives that the average operator can rid the eye at once of cataract, subcapsular cortex and capsule, with as little ultimate damage to the integrity of the organ as it now incurs from the best chosen of other methods, ophthalmic surgery will have made an enormous step in advance. That such a time has not arrived no one can deny, and few perhaps are so optimistic as to believe that it is near."

The last chapter deals with the removal of foreign bodies from the interior of the eye, and contains a complete description of localization and magnet extraction.

The six hundred and fifty-eight pages are generously illustrated with nine full-page plates, showing one hundred instruments, and three hundred other illustrations. Many of the illustrations are of the rough sketch variety, diagrammatic but effective, and readily comprehended.

We know of no similar work in the English language with which Beard's Ophthalmic Surgery can be compared. We have seen comparisons drawn between it and the English translation of Mellor's Ophthalmic Surgery, but such are not well taken. Meller's book deals only with such operations as are performed in the clinic of Professor Fuchs, of Vienna, and is therefore provincial in scope.

Except for an unusual number of typographical errors which always "creep in" when the proofreaders are not looking, and a paper which might be considered too highly calendered, the press work and mechanical makeup of the book are excellent.

William T. Shoemaker.

# NEWS AND NOTES.

## The Herman Knapp Testimonial Fund.

With a view of encouraging research work and otherwise furthering the progress of ophthalmology, and honoring one of our most distinguished members, who has long been recognized as one of the foremost ophthalmologists of the world, the officers and executive committee of the Section on Ophthalmology of the American Medical Association propose the establishment of a fund, to be known as The Herman Knapp Testimonial Fund, to be used exclusively in annually awarding an appropriate honorarium to any member of the section or to any distinguished medical man who comes before the section, as its guest, by special invitation of the officers and executive committee of the section, and presents an especially meritorious and valuable address or thesis bearing upon ophthalmological practice, which may be classed under one of the following heads: First, such as may contain and establish positively new facts, modes of practice, or principles of value; Second, such as may contain the results of well-devised original experimental research; and Third, such as present so complete a review of the facts on any particular subject as to enable the writer to deduct therefrom conclusions of importance.

It is further proposed to set aside each year, for a period of five years, an appropriate sum for the purpose of procuring a suitable bust of Dr. Herman Knapp, the bust to be placed in a location selected by a committee representing the section.

It is proposed that the Knapp Testimonial Fund shall be raised by voluntary contributions from the members of the section, and that to insure the success of the plan, those who subscribe to the project shall agree to give a certain sum annually for a period of five years. Every member of the section should be interested to the extent of a subscription of at least one dollar per year, though it is hoped that many of the more active members will be willing to become responsible for an annual subscription of five dollars or more.

The officers and executive committee will act as a board of trustees for the safe keeping and proper disposal of the fund. Remittances may be made to the Secretary, who will tender receipt. A. E. BULSON, JR., *Secretary.*

Fort Wayne, Indiana.

### Section of Ophthalmology of the American Medical Association.

### Announcements.

All meetings of the section on ophthalmology, St. Louis session, 1910, will be held in Aschenbroedel Hall, 3535 Pine street (one-half block east of Grand avenue and two blocks south of Olive street). Telephone, Kinloch, Central 45.

A fairly large room adjoining the general audience room at the place of meeting has been reserved as a museum for the exhibition of gross and microscopic pathological specimens, charts, diagrams, new instruments, etc. Microscopes will be furnished for the examination of microscopic specimens. Another adjoining room may be used for demonstrations and committee meetings. Members desiring to have space for exhibits are requested to make their wishes known to the secretary of the section.

Tuesday evening will be devoted to the section entertainment, and the local members who have charge of this feature are arranging for an entertainment which they hope will be enjoyed by those who attend.

On Wednesday afternoon the section members will have the pleasure of listening to an address by J. Herbert Parsons, F. R. C. S., of Moorefield's Hospital, London, who has accepted the invitation of the chairman to be the honored guest of the section at the St. Louis session.

The meetings of Friday will be purely clinical. The morning meeting will be devoted to the exhibition of rare and otherwise interesting cases, and to the discussion of case reports. Not more than 30 minutes will be devoted to the discussion of any one case, including the five minutes allowed the member who exhibits the patient or presents the case report. Members desiring to exhibit patients or present case reports are requested to write the secretary of the section.

On Friday afternoon there will be an operative clinic at one of the St. Louis hospitals, given through the courtesy of the local members of the section. At this clinic some of the prominent members of the section will, through the courtesy of the local members, be invited to perform operations for which they are particularly noted or which are original with them.

Members will be permitted to exhibit new instruments or appliances before the section, from 9 to 9:30 each morning, except Friday. No member will be permitted to have more than ten minutes for this purpose.

Essayists who desire to use a stereopticon or opaque projector in connection with the presentation of their papers are requested to notify the secretary of the section to that effect at the time of forwarding manuscripts.

All manuscripts must be in the hands of the secretary of the section on or before March 15th. Papers appearing in the presessional volume may be illustrated in black or white, or even in colors if photographs or drawings in black and white or in colors are submitted sufficiently early to permit of plates being made. Extra time must be allowed for the making of colored plates.

Members are especially urged to assist in establishing the Knapp Testimonial Fund, the plan for which is explained in a separate circular. The establishment of the fund will enable the officers and executive committee to further the interests of the section in a manner not now possible, owing to the lack of funds for carrying on the contemplated work. Every member of the section ought to be willing to give at least the minimum requested as an annual subscription.

On the recommendation of the local Committee on Arrangements for the section on ophthalmology, the Hotel Marquette, European plan, Eighteenth and Washington avenue, has been selected as the headquarters for the section for the St. Louis session. This hotel is located near the general headquarters of the Association, and is also as near to the meeting place of the section as any other hotel. It will add much to the social features of the session if the majority of the members are located at one hotel. A card giving rates and other information concerning the Hotel Marquette is herein enclosed. Members are urged to secure reservations at once.

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A sleeping car going from New York direct to St. Louis via the Pennsylvania Lines has been reserved for members residing in the East who care to travel together in going to the St. Louis session. For particulars concerning reservations write the chairman of the section, Dr. W. C. Posey, Twenty-first and Chestnut streets, Philadelphia.

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Our St. Louis friends assure us that the weather in St. Louis during the early part of June is delightful, so that members should not remain away from the 1910 session of the A. M. A. on account of the fear that they will suffer from the heat.

ALBERT E. BULSON, JR.,
*Secretary.*

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# REMARKS ON THE PATHOGENY AND SEMIOLOGY OF PUPILLARY TROUBLES.*

Doctor Ch. Lafon.

Translated by Clarence Loeb, A. M., M. D.

St. Louis, Mo.

In a preceding article[†] we have been led by the analysis of clinical and experimental facts, to formulate a new theory of the motor innervation of the iris. When we pass to the study of pupillary troubles, we find that their pathogenic interpretation and their semiologic significance reflect the insufficiency and the diversity of the theories advanced to explain the normal movements. We propose now to analyze them and classify them according to our theory.

In the first place a division seems to be necessary. One group should contain those troubles which have an intraocular cause, and the other those which have an extraocular one. But on reflection, there is no hesitancy in recognizing that this is wrong. Though all the troubles of the second group are due to lesions of the iridomotor nervous system, those of the first have two very different categories of causes; first, lesions of the iridal parenchyma, and second, nervous lesions analagous to the foregoing, from which they cannot be separated. Accordingly, another plan must be adopted.

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*Archives d'Ophtalmologie, 1909, Vol. XXIX, p. 491.

[†] Archives d'Ophtalmologie, July, 1909. Translated in the January number of Annals of Ophthalmology.

In the first place, it is necessary to study the pupillary disturbances which are not caused by a lesion of the iridomotor nervous system. These are all the changes, inflammatory or otherwise, of the iridal parenchyma. If the motor fibers are affected, it is always secondarily. These affections are in the domain of the ophthalmologist, and unfortunately physicians who are not specialists cannot always make them out. They frequently confuse them with those described below.

In the second part we have grouped all the pupillary affections due to an organic lesion or functional alteration of the iridomotor system, either intra- or extraocular. As we shall see, the fact that they lie partly in the orbit and partly in the eyeball does not justify separating the ciliary nerves into two parts. The modifications in the iridal parenchyma which have been observed in this group are always secondary.

We deem it useless to speak of the technic of pupillary examination. Still, we wish to say a few words about a method from which much has been expected, the test by collyria.

It has been known for a long time that the action of miotics and mydriatics is modified in certain pathologic conditions. Certain authors, K. Baas, H. Fraenkel, O. Schwarz, L. Bach, H. Coppez, etc., have tried to draw certain diagnostic features from this fact. When their works are read there is a striking discord between the results obtained, proving that they have subordinated the facts to their personal conceptions of the physiology of the pupil. We cannot refrain from discussing here an article by H. Coppez,* which is a recent example, and which is well known in France.

H. Coppez uses three collyria; a miotic (eserin ½%), and two mydriatics (atropin ½%, and cocain 2%). He admits that the first two act by exciting or paralyzing the nerve endings in the sphincter (Schultz). As for cocain, he believes that it excites first the nerve endings in the dilator and then, in strong solutions, paralyzes the endings in the sphincter (!). In practice, only dilating collyria are necessary, and these are the rules which he lays down for the tests:

*A. Instillation of cocain on the dilated side.*

(a) Spasmodic mydriasis (spasm of the dilator by excitation of the sympathetic), no supplementary dilatation; (b) paralytic mydriasis (paralysis of the sphincter by lesion of the III nerve), maximal dilatation.

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*H. Coppez, L'exploration de la pupille, Arch. d'Ophtal. XXIII, 1903.

*B. Instillation of atropin on the contracted side.*

(a) Paralytic miosis (paralysis of the dilatator by lesion of the sympathetic), slight dilation; (b) spasmodic miosis (spasm of the sphincter by excitation of the III nerve), maximal dilation.

In short, H. Coppez accepts without reserve the existence of a dilator muscle, supplied by the sympathetic system. He pays no attention to peripheric innervation, although it is possible to imagine pupillary troubles due to excitation or paralysis of the ciliary nerves and ganglion. Finally, his conception of the action of cocain is as inadmissible as the analogous hypothesis given elsewhere to explain atropin dilatation. We think that cocain, which is an anesthetic agent, makes the motor cells of the ciliary ganglion paretic, and even paralyzes them in strong solutions. This is what one actually finds.

(1) When the pupillary trouble is due to any lesion of the cordal or mesocephalic system, the peripheric innervation being intact, the effect of poisons which act on the nerve endings in the sphincter is not altered. Atropin causes a maximal mydriasis*, and eserin causes a miosis equally maximal. On the other hand, the action of cocain should be less pronounced the stronger the excitations received by the motor cells of the ganglion from the higher centers. This is the case in pupillary troubles from excitation of the spinal or mesocephalic centers.

(2) When the pupillary trouble is caused by some lesion of peripheric innervation (ciliary nerves and ganglion) it is easy to understand that the action of the collyria would be modified. These facts were clearly seen by Duchenne, of Boulogne, in tabes, and they have been recently studied by Toulouse and Vurpas in general paresis. We will return later to this question.

(3) The dilating collyria can be used to show lesions of the iridal parenchyma (synechiæ, atrophies, etc.).

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*In the first few days after section of the cervical sympathetic vasomotor troubles exist, congestion of the iris and hypotonia, which oppose the action of mydriatics; but these phenomena disappear after several days, and dilatation is then produced normally. Much later, this same section may produce atrophic lesions of the iris stroma, which oppose the action of the mydriatics.

In conclusion, we think that there is no proof of the collyria being what H. Fränkel, H. Coppez, etc., thought them.

In this work we will completely disregard the pupillary troubles due to changes in the iridal stroma, and will study those which are caused by a lesion of the iridomotor nervous system. They are divisible into three groups:

(1) Troubles following lesions of the cordal system, i. e., the sensitivomotor reflex arc.

(2) Troubles following lesion of the mesocephalic system, i. e., the sensoriomotor reflex arc.

(3) Troubles following lesion of the peripheral innervation, i. e., ciliary nerves and ganglion.

Not to lengthen this article unnecessarily, we will rapidly pass over the facts already known to us, and, that the new interpretation may be better understood, will ask the reader to refer to the preceding article, in which we have explained our conception of the motor innervation of the iris.

## I. PUPILLARY TROUBLES FOLLOWING LESIONS OF THE CORDAL SYSTEM.

The cordal system, whose peripheral, centrifugal portion is contained in the cervical sympathetic, has control over the fundamental dilatation and the sensitivomotor reflexes. It forms a diastaltic arc whose origin is the sensitive, sensorial and psychic sensations of all kinds, which continually assail our cortex and constitute conscious cerebral activity. We will study in succession the troubles due to each segment of the arc.

A. Centripetal Path.—It is necessary to examine the lesions of the cortical portion, the point of the departure of centripetal excitation, and those of the subcortical, which conduct this excitation to the reflex center.

(a) *Cortical Portion.* We know that any excitation affecting any part of the cortex causes an augmentation of the fundamental dilatation on each side equally. All affections which cause a permanent hyperexcitation of the cortex are accompanied by dilatation of the pupil with persistence of the reflexes, e. g., encephalitis, meningitis, cerebral tumors, mental diseases (mania, ecstasy, etc.), strong and continued pains (neuralgiæ, childbirth, visceral crises of tabes, etc.).

Accompanying or independent of the hyperexcitation, a cortical hyperexcitability may exist, which is characterized by an increase in the amplitude of the sensitivomotor reflexes, and which is due to the same causes.

This allows us to understand the paradoxical reaction to light. It is well known that this phenomenon has evoked a large number of hypotheses, all inadmissible, and certain authors have denied its existence. Thus, Uhthoff, Fränkel and others consider the dilatation as due to divergence. This explanation may apply in some cases. However, it is necessary not to confuse it with a pupillary trouble, which we will study later under the name of asthenic trouble (the pupil reacts normally to light, but the contraction does not persist, in spite of the persistence of the excitation). Nevertheless, there exists a true paradoxical reaction. When there is abrupt illumination of the retina of a patient with a paralysis of the motor oculi, i. e., a lesion leaving the optic fibers, the sensitivomotor arc, and the peripheral innervation intact, the abolition of the photomotor reaction allows the sensorial reflexes to be freely produced. In general, this pupillary dilatation is very feeble. It is not perceptible in a simple clinical examination and, to be seen, requires the use of an ocular lens. But if at the same time the patient has a cortical hyperexcitability, the amplitude of the sensitivomotor reflexes will be increased, and the pupillary dilatation will become easily perceptible. This is why the paradoxical reaction to light has been especially observed in affections capable of causing at the same time paralysis of the motor oculi and cortical hyperexcitability (meningitis, encephalitis, etc.).

Hypoexcitability of the cortex causes a diminution of the fundamental dilatation and of the amplitude of the sensitivomotor reflexes. This is the explanation of the pupillary contraction of the new-born, old people, and all patients whose cerebral activity is diminished.

In psychiatry, it has been observed in all states of depression (melancholia, dementia, idiocy, etc.). Certain authors have attributed the miosis of old age to presbytia or a medullary lesion. We believe, however, that it is due to the decrease in cerebral activity, which is known to be due to a senile sclerosis of the cortex. Contraction is, therefore, not only a sign of old age, but also a symptom of senility.

A localized lesion has no effect on the fundamental dilatation if the rest of the cortex retains its excitability, but total paralysis causes its abolition, as well as that of all reflexes. There results an immobile contraction of the pupil identical with cathypnic contraction. In pathology this paralysis of the cortex constitutes coma.

There exists an extreme confusion as to the state of the pupil in coma. All possible conditions have been observed, and certain authors have proposed them as important signs to establish the diagnosis in certain cases. After a period of progressive somnolence, in which the pupil contracts as the mental faculties become weakened, coma, properly so-called, is present. Only the vegetative functions survive, and the pupils are in a state of cathypnic contraction.*

As the end is about to come, the vegetative functions are paralyzed in their turn (carus). The sphincters relax, and that of the iris does not escape this rule. This is the agonal dilatation of the pupil, which we will study later.

Apoplexy differs from coma only in the abruptness of its onset. In the Cheynes-Stokes respiration, the pupils faithfully reflect the state of the cortex. It is well known that during the periods of apnea the patient is in coma, while during the period of polypnea there is excitation or even delirium.

There are other paralyses of cortical functions which are generally transitory, and which it is not the custom to class as comas. They are syncope, ictus, the crises of epilepsy and hysteria, narcosis, etc. When the loss of consciousness is complete, the pupils are contracted and immobile. In general anesthesia, slight relaxation of the cathypnic contraction with progressive reappearance of the reflexes indicate awakening. On the other hand, rapid dilatation without return of the reflexes is indicative of imminent death—it is the agonal dilatation.

In order that one of the sensitivomotor reflexes may be abolished, it is necessary that the two corresponding symmetrical cortical zones shall be destroyed simultaneously, which is not possible. When a peripheral anesthetic zone is excited, the sensitive reflex is not produced. But it cannot strictly be said that it is abolished, since the cortical excitation, i. e., the pain which should produce it, does not exist. The persistence of the reflex in the hysteric anesthesia is a powerful argument in favor of Babinski's theory. This anesthesia is always simulated, either consciously or not.

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*This rule has only one exception; in the coma due to poisoning by belladonna, the pupils are dilated ad maximum. This mydriasis is not of central origin, but is due to the direct action of atropin on the sphincter. It is necessary to except also those cases where there exists prior lesions of the motor oculi or the peripheral innervation.

(b) *Subcortical Portion.* This portion of the centripetal path is formed by fibres which converge from all points of the cortex towards the optic tracts. Then they are gathered into a bundle which passes into the posterior arm of the internal capsule, to pass thence into the medulla. The lesions which affect this tract are almost always destructive (tumors, hemorrhage, etc.). To abolish the fundamental dilatation and the sensitivomotor reflexes, they must be bilateral. This explains why there are no pupillary troubles in the thalmic syndrome, although the lesion certainly affects one of the two centripetal paths.

B. Reflex Center.—We have shown that the reflex center is situated in the medulla, probably in the columna solitaria. A lesion in this region causes sudden death; therefore, no one has observed pupillary troubles resulting from it.

In the essential tachycardia of Bouveret, a bilateral miosis is often observed, with preservation of sensoriomotor reactions. Debove explains this pupillary trouble as well as the tachycardia and accessory symptoms as due to a bulbar neurosis. Might not these phenomena be due to a cellular lesion of the medullary centers?

C. Centrifugal Path.—The medullary center gives origin to two independent, symmetrical centrifugal paths. Each is accompanied by motor fibers to the muscle of Müller, and by vasoconstrictor fibers to the corresponding half of the face. Therefore, a destructive lesion always causes the syndrome of Horner, and an excitation causes the syndrome of Basedow, but not in a very constant manner. It is necessary to study the pupillary symptomatology for each portion of the centrifugal path.

(a) *Medulla.* Only a small number of cases are known in which a destructive lesion, usually hemorrhage, has interrupted the medullary centrifugal path, causing Horner's syndrome on the corresponding side. It is easy to understand how other fibers are affected at the same time, causing hemanesthesia, crossed hemiplegia, hemasynergia and lateropulsion on the side of the lesion. Other troubles may be observed which allow the height of the lesion to be determined, e. g., hypoesthesia in the territory of the corresponding trifacial, syndrome of Arellis, etc.

(b) *Cord.* All the extrinsic causes of spinal lesions are known. When they are mild, they may cause excitation and Basedow's syndrome. When they are destructive they cause Horner's syndrome. Those above the fourth cervical are almost immediately fatal.

According to the classic conception, all authors have localized in the center of Budge the intrinsic spinal lesions which cause pupillary troubles. We believe, however, that they may lie anywhere from the first thoracic vertebra to the upper part of the medulla. Basedow's syndrome is very rarely noted, generally passing unobserved. It has been observed in some cases of meningomyelitis at the beginning and in one case of syringomyelia. (Wiidbrand and Sänger.) Horner's syndrome is more frequent, and the list of spinal affections where it has been observed will be found everywhere.

(c) *Anterior Root of the First Dorsal Pair of Nerves.* Naturally the lesions affecting this portion cause pupillary troubles only if they are situated below the ramus communicans. They are almost always destructive and are accompanied by an inferior radicular paralysis of the brachial plexus (Klumpke-Dejerine type).

(d) *Cervical Sympathetic.* If the literature is examined it will be found that pupillary troubles caused by destruction, and especially by paralysis of the cervical sympathetic, are rare. But it is necessary to assign several kinds of troubles to this part of the centrifugal path.

First are the *voluntary changes* of the pupil. This is not a very correct expression, for the will alone is impotent. However, in certain patients, these modifications are caused by a group of voluntary movements. In a case of cancerous adenopathy of the neck, Strümpel obtained a pupillary dilatation by compressing the affected nodes. Szontagh caused the same phenomenon by forcibly pushing the head backwards, and many similar observations have been made. It is probable that these acts caused a compression of the sympathetic chain followed by its excitation.

For lack of sufficient pathogenic explanation a very complex group of pupillary modifications has been called reflex troubles. Their analysis allows the elimination of a certain number, which are added to those due to lesions of the sensoriomotor diastaltic arc or the peripheral innervation. Among the troubles of sympathetic origin, certain ones possess an anatomic substratum. In pulmonary tuberculosis the syndrome of Basedow or of Horner is often observed, the latter especially in the period of cavity formation. At the autopsy lesions of pachypleurisy are found affecting the superior thoracic and inferior cervical ganglia with inflammation of their interstitial tissue. It is very probable that the same is true in pleurisy and pneumonia. In the latter, Pernot has shown that pupillary troubles appear only when the upper lobe is affected.

Sensitivomotor dilatation has been noted in a certain number of cases, where it is impossible to show a direct lesion of the oculopupillary fibers; in helmenthiasis of infants (Roque), during the first months of pregnancy (Pechin), in malarial splenomegaly (Signorelli), etc.

These facts can be explained only by an excitation of the abdominal sympathetic, which is transmitted to the cervical chain, and passes into the pupillary centrifugal path as it enters the ganglion. In these cases pupillary contraction is never observed, for we believe that paralytic phenomena cannot be transmitted from neuron to neuron. Before making a diagnosis it is necessary to be certain that the dilatation does not belong to the category of asthenic troubles, which we will study later.

It is probably to the sensitivomotor mydriasis that the rare cases of true see-saw mydriasis must be attributed; the excitation of the sympathetic varies from one side to the other, according to the evolution of the causal affection.

(e) *Pupillary Fibers.* The traumatic or spontaneous lesions of the sympathico-Gasserian anastomosis and portion of the centrifugal path in relation to the trigeminus are still little known, for other nerve fibers are almost always involved (fracture of the base of the skull, the top of the orbit, tumors, etc.). On the other hand, a certain number of reflex troubles are to be attributed to an affection of this part of the sensitivomotor arc.

The pathogeny of migraine is still unknown. Some of its symptoms are due to a lesion of the trifacial, and others can be explained only by participation of the sympathetic in the process. In the red form the pupil is contracted, and vasodilatation is pronounced, phenomena which are probably to be attributed to a paralysis of the sympathetic. In the white form the pupil is dilated, and the corresponding half of the face is pale (excitation of the sympathetic), but the conjunctiva and the retina are congested. This contradiction has exercised the sagacity of the authors. We think the solution should be sought in the concomitant excitation of the ocular vasodilators which the trifacial supplies.

Vincent has noticed a sensitivomotor contraction in the course of phlegmonous angina, during the stage of suppuration and on the diseased side. He refuses the idea of a sympathetic paralysis, because the syndrome of Horner is not complete, and claims that it is due to an excitation of the motor oculi propagated by a nervous anomaly (!). Knowing the relation of the pharynx to the portion of the sensitivomotor path, which we are studying, we believe that it is a case of propagation of the inflammatory process analagous to that spoken of in the case of pulmonary tuberculosis. The separation of the pupillary and vasomotor fibers explains the absence of the complete Horner's syndrome.

In the course of aural affections pupillary troubles are often noted. To explain them, reflex action has been invoked, acting through Deiter's nucleus and the motor oculi (!). In one case, at least, the pathogeny is very different. Very recently Baldenweck has shown that in the syndrome of Gradenigo the paralysis of the external motor oculi and the facial neuralgia which accompanied the otitis media were due to a meningeal propagation of the inflammatory phenomena. The gasseritis found at the autopsy explained the pupillary trouble by a lesion of the neighboring iridomotor fibers.

The same pathogeny must be accepted in explaining the pupillary troubles observed in the course of certain neuralgias of the trifacial, following ophthalmic herpes.

Sensitivomotor dilatations have been observed coexistent with dental lesions, nasal ulcerations, foreign bodies in the external auditory canal, etc., which disappear with their causal affections. They are probably phenomena analogous to those noted above. The irritation of the cephalic sympathetic is propagated to the pupillary fibers and causes their stimulation.

Finally, Princus and Plattner, and Jacquet have observed a contraction corresponding to plaques of unilateral alopecia. Unfortunately the lack of precise description does not allow a judgment as to whether or not it is a trouble due to lesion of the sensitivomotor arc.

### II.—PUPILLARY TROUBLES DUE TO LESIONS OF THE MESOCEPHALIC SYSTEM.

The mesocephalic system, whose centrifugal peripheral part is contained in the motor oculi, causes cathypnic contraction and forms the diastaltic arc of the sensoriomotor reactions. But it is independent of the arc of the sensitivemotor reflexes. Here, too, we will study successively the troubles due to each of the segments of the arc.

A. Centripetal Paths.—Each of the two reactions which make up the sensoriomotor function has its own independent centripetal path.

(a) *Reaction to Light.* Hyperesthesia to light causes pupillary contraction, accompanied by other protective reflexes. The contraction, which is not maximal, is equal on both sides and disappears in darkness. The other reflexes are not abolished, but their amplitude is greatly diminished by the contraction of the sphincter.

In the affections accompanied by sensitivo-sensorial hyperesthesia, especially in meningitis, a contraction is often observed whose pathogeny is not well understood. It may be due to a luminous hyperesthesia—it is then equal on both sides and disappears in darkness with the photophobia—or to an excitation of the centrifugal path by the inflammatory process; it is then usually unequal and persists in darkness. Certain superficial lesions of the cornea, abrasion, foreign body, etc., cause pupillary contraction. Here this is due to the concomitant photophobia, or rather it is caused by the excitation of the cells of the ciliary ganglion by the irritated sensitive corneal nerves.

Luminous hypoesthesia causes a diminution in the reaction, but only when the retina or the optic nerve is greatly involved. In luminous anesthesia, or blindness, we know that the troubles of the photomotor reactions vary with the location of the lesion.

(w) Unilateral blindness (retina or optic nerve)—Direct reaction abolished; consensual reaction normal.

(x) Bitemporal hemianopsia (chiasm)—Direct and consensual hemiopic reaction.

(y) Homonymous lateral hemianopsia—(1) Basal lesion (tracts or primary optic centers), direct and consensual hemiopic reaction; (2) subcortical lesion (optic fibers or cortical lesions, normal luminous reaction.

(z) Bilateral blindness—(1) Lesion below the primary optic centers, reaction abolished; (2) lesion above reaction normal.

Such are the facts on which Wernike's law is based. We have not considered Schwartz's hypothesis (hemiopic reaction without hemianopsia, following lesion of the centripetal path between the external geniculate body and the nucleus of the III nerve), which has never been verified clinically. As was said in our first paper, Wernicke's law is not accepted with its former unanimity. There should be no dispute as to the lesions situated below the primary optic centers. There have been published a certain number of cases of cortical or subcortical hemianopsia, in which the hemiopic reaction has been observed. We know how delicate the examination of this region is, especially in ignorant people. Therefore, positive facts only are of value, and when the reaction fails, we should always ask whether its absence is not due to an error of technic. If it has been definitely shown that cortical or subcortical lesions are accompanied by the hemiopic reaction, the origin of the luminous reflex should be sought, not in the retina, but rather in the perceiving cortex. The optic fibers no longer form the centripetal path of the reaction, but rather play the role of peripheral sensitive nerves, and the real centripetal path joins the calcarine region with the reflex center. Thus the question of special pupillary fibers will disappear. In short, the mechanism of the reaction to light will be the same as all other pupillary reactions.

(b) *Reaction to Accommodation Convergence.* This reaction has its origin in the cortex, but the region is still not well known, nor do we know the tract of the centripetal fibers. In paralysis of convergence it is abolished alone, and we have at the same time cycloplegia and loss of accommodation with paralysis of the internal recti. On the other hand, in the increase of convergence, the reaction persists, but is weakened.

These two syndromes indicate a lesion of the supranuclear center of convergence (Parinaud), a center whose existence has never been anatomically demonstrated. The centripetal path is said to pass through this hypothetical center.

Diphtheric paralysis of accommodation is not usually accompanied by pupillary troubles. In some rare cases there has been observed an abolition of the two sensoriomotor reactions due probably to a lesion of the reflex center or centrifugal path. There has been noticed, also, a weakness and even paralysis of accommodation-convergence alone. This last trouble can be explained only by a lesion of the centripetal path, at least it is not due to a lesion of the peripheral innervation.

B. Reflex Center.—We have explained our conception of the role played by the reflex center of the mesocephalic system in the production of cathypnic contraction and sensoriomotor reactions. It is functionally single, and a lesion always affects both pupils at the same time. Furthermore, both photoregulator reactions are always affected at the same time. It is necessary to distinguish functional troubles from destructive lesions.

(a) *Functional Troubles.*—Weakness of the power of reflex excitation of the mesocephalic center causes troubles which we have called asthenic disturbances of the pupil. The sensoriomotor reactions exist, but the contraction of the sphincter, instead of remaining constant as long as the excitation persists, becomes less and less by little successive jerks. If a new stimulus is given, or its intensity is increased, the contraction is again produced, but again relaxes. When the illumination of the two eyes is unequal, the more obscured pupil dilates first, and its diameter is greater than the other. There results a false anisocoria, which disappears when the illumination becomes the same in both eyes. These pupillary disturbances are very frequent and have often been confused with others (paradoxical reaction, Argyll-Robertson pupil, pupillary inequality, etc.). They indicate a rapid fatigue of the excitoreflex power of the iridomotor center, and have been observed in cases where a depression of the nervous system exists.

We have studied, above, the cathypnic contraction which is observed in all paralyses of the cortex. When death approaches, the vegetative functions are paralyzed in their turn.

The excitomotor centers, which keep the sphincters contracted, no longer act, and they are allowed to dilate. The sphincter iridis is no exception to this rule, and for some time its tonus is maintained only by the action of the ciliary ganglion. When this has disappeared in its turn, death has already done its work, and the ocular hypotension consequent thereon opposes the maximal dilatation of the pupil. Sometimes a slight contraction has been observed, which has been ascribed to cadaveric rigidity. We think that that is an error, for raising the ocular tension by injection of some fluid is followed by maximal dilatation. This agonal dilatation is a constant phenomenon, and is observed even in opium coma (Wurtz), although miosis has been considered a pathognomonic sign of this intoxication.

(b) *Organic Lesions.* The organic lesions of the reflex center are all destructive, and none is known to cause stimulation. They always cause the simultaneous abolition of the two sensoriomotor reactions in both eyes, as well as the disappearance of the cathypnic contraction.

The systematized lesions are found in the superior poliencephalitides, acute or chronic, usually of the ascending type. The beginning is an ophthalmoplegia externa, or this may follow an anterior poliomyelitis or an inferior poliencephalitis (labio-glosso-pharyngeal paralysis). In every case the inner muscles of the eye are the last affected. In some rare cases, however, the descending type has been observed. The sphincter iridis and the ciliary nuclear ophthalmoplegiæ usually do not affect the unstriated intraocular muscles.

The nonsystematized lesions are the destructions of the cerebral substance, hemorrhages, softening tumors, etc. They are rare, and we shall see the majority of the so-called nuclear oculomotor paralyses are unilateral and consequently infranuclear.

C. Centrifugal Path.—The mesocephalic center gives rise to two separate and symmetrical centrifugal paths, and a lesion limited to one affects only the corresponding pupil.

Have pupillary disturbances due to excitation of this centrifugal path ever been found clinically? It has been observed that in certain meningeal inflammations, especially at the beginning, there exists a pupillary contraction which has been ascribed to an irritation of the motor oculi. But this is only an hypothesis, and in reality we know nothing positive on this point.

The paralytic troubles are much better known. The cathypnic contraction and the two sensoriomotor reactions are abolished at the same time. Furthermore, Haab has shown the disappearance of the ideomotor reflex to mental representation of visual sensations.

In their radicular portion, the fibers which arise from the nucleus of the III pair are arranged fan-shaped, and a destructive lesion (hemorrhage, malacia, tumor, gummi, etc.) can affect only a part of the fibers, causing only partial paralysis. When the lesion is very anterior the whole centrifugal path may be involved, but on account of their proximity the ciliomotor fibers are almost always affected at the same time, resulting in an ophthalmoplegia interna. The possible association of oculomotor paralyses with other cerebral paralyses is well known (Weber's and Benedict's syndromes). The lesions of the oculomotor trunk are too well known to mention. Up to the last few years it was thought that they always caused paralysis of all the innervated muscles. However, indisputable facts have proven that a compression may produce partial paralyses, notably of the sensoriomotor reactions. Bernheimer supposed that the iridimotor fibers occupied the center of the nerve trunk, just as the macula fibers lie in the optic nerve. A peripheral compression would produce its maximal effect on the central fibers. It must be stated that these partial paralyses of the trunk have not the distinctness of those caused by radicular lesion; in addition to those muscles distinctly paralyzed there are often others more or less paralyzed. Nevertheless, the localization of a lesion of the centrifugal path is very delicate.

The pathogeny of ophthalmic migraine is still very obscure. The strict unilaterality of the paralytic phenomena eliminates a nuclear lesion. Ought we, with the German authors, to associate it with the recurring paralyses which are symptomatic of compression by a neoplasm or a meningeal irritation? In two cases, one of our own,* the cytologic examination of the cerebrospinal fluid was negative, which seems to dispose of the theory of a meningeal affection. Is it the expression of a neuritis (Marina), of an unknown idiopathic process (Charcot), or of a congestion? We know that generally after a variable number of attacks, the paralysis tends to become permanent.

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*In Leclezio, These de Bordeaux, 1904-1905.

### III. PUPILLARY TROUBLES FOLLOWING LESIONS OF THE PERIPHERAL INNERVATON.

We have already shown that neither the cordal nor the mesocephalic system innervate the sphincter directly, and that their role consists in modifying the tonic action of the ciliary ganglion, the true peripheral center. The pupillary troubles due to lesions of the ganglion or ciliary nerves are as yet not well known, for most authors willy nilly ascribe all troubles to lesions of the sympathetic or motor oculi.

The ciliary system does not form a reflex arc in the true sense of the word. Still, certain peripheral sensorial stimuli are able to modify the tonic action of the ganglionic motor cells (Francois-Franck). We know that the centripetal fibers contained in the short ciliary nerves traverse the ganglion and that some of them stop there, since cauterization of the cornea causes chromolysis of certain ganglionic cells.

A. CENTRIPETAL PATH.—We have already seen that the superficial affections of the cornea may be accompanied by pupillary contractions, irrespective of all iridal inflammatory complications, and that this, when it is bilateral, may be explained by the concomitant photophobia. But when the contraction is limited to the diseased eye, it can be explained only by the stimulation of the ganglionic cells by the irritated sensitive fibers.

The same explanation may be applied to the contraction observed in electric and nival ophthalmias. It is known that these affections are caused by the noxious action of the ultra-violet rays.

B. GANGLIONIC CENTER.—The pupillary troubles of ganglionic origin are found in several forms, often combined in the same disease. They are: (1) dynamic troubles—sluggishness, dissociation and reflex immobility; (2) static troubles—contraction, deformity and pupillary inequality.

(a) *Definition.* We think it is useless to define or rather limit the meaning of these terms. Sluggishness is shown by a diminution of the amplitude of the reflex movements and by increase in the time of their duration. In a more advanced condition these movements are produced only under the influence of a very strong stimulus.

*Myotonic contraction or bradycoria* consists in weakness of the reaction to accommodation-convergence and is a form of sluggishness which is observed only after loss of the luminous reaction.

*Dissociation* is the isolated loss of one or more reflexes, the central perception, their point of origin, being preserved. The best known and most frequent example is the loss of the luminous reaction with retention of the accommodation-convergence, known as the Argyll-Robertson pupil. The opposite dissociation, denied by many, has nevertheless been distinctly observed. Furthermore, there is often present at the same time the loss of reflex to pain and that of other sensitivomotor reflexes.

Finally, there is another form of dissociation which has never been reported. It is the persistence of cathypnic contraction in patients whose luminous reaction has disappeared naturally in conditions which do not cause miosis. At our request, Doctor Jacquin, chief physician at the Asylum, has examined for this in a number of cases of general paresis, with the Argyll-Robertson pupil, with dilatation or transformation; during sleep the pupils tend to become equally contracted and the deformity becomes less or disappears.

Loss of all reflexes causes *pupillary immobility*. It is the custom, especially in Germany, to call the Argyll-Robertson pupil by the name of "reflex immobility of the pupil," understanding the words "to light." This custom should be abolished, for it causes a confusion with the true immobility, where all the reflexes are lost.

The *contraction* has no special character, but is always combined with other troubles. We will speak later about dilatation.

*Pupillary deformity* requires no explanation. It is sometimes obliquely oval (A. Terson), but it very frequently defies description. It is exaggerated by miotics and mydriatics.

On the other hand, *pupillary inequality* or *anisocoria* requires limitation. Some authors call it anisocoria every time the two pupils have a different diameter, whatever the cause may be. This definition allowed Fränkel to describe almost all pupillary troubles under this name. Most authors, however, hesitate to define inequality. On reading their works, it is noticed that they never apply these terms to differences in diameter due to a known lesion of the iridomotor system, but reserve it for troubles with unknown etiology. It is easy to understand how such a custom makes for vagueness. Therefore, we reserve the term pupillary inequality and anisocoria to difference in diameters due to lesion of the peripheral motor innervation alone.

We should avoid the physiologic anisocoria, and the inequality due to dissimilar refraction, which are due to errors of technic and are only asthenic troubles. The same is true of transitory and see-saw anisocoriæ noted in a lot of morbid states. Finally, congenital inequality exists, though it is very rare.

(b) *Evolution.* The existence of these troubles has been known for some time, but their evolution has been unknown. For example, it was thought, and certain authors still think, that the Argyll-Robertson pupil was a fixed symptom and was then definite. So every time there was a modification of this dissociation they said that it was a false Argyll-Robertson pupil. But in proportion as it was recognized that it was not a pathognomonic symptom of tabes it has become better known by studying it in diseases where its evolution was more rapid, for example, in general paresis.

Disassociated abolition is always preceded by a sluggishness, which is more and more accentuated. At a certain time, daylight is no longer able to cause the luminous reaction, but an intense illumination in the dark room can still cause a slight contraction (Rochon-Duvigneaud and Heitz). After a shorter or longer period of time, during which the luminous reaction alone has been lost, the sensitivomotor and the accommodation-convergence reaction tend to disappear in their turn; in short, the dynamic troubles lead to immobility. The disappearance of a reflex is not always definite; its return may be observed. Marandon de Montyel has recently shown this mobility in cases of general paresis and tabes where they have returned, increasing day by day. Finally, cure is frequent in dissociations of traumatic origin.

Static troubles show the same mobility. Miosis, inequality and deformity become modified more or less abruptly. It is often necessary to observe the patients for several years to recognize these variations.

All these troubles combine in various ways and without any precise rule. Both eyes are generally affected at the same time, but most frequently in different degrees, and it is not infrequent to find the Argyll-Robertson pupil, for example, on only one side. Still, deformity cannot coexist with complete immobility.

(c) *Pathogeny.* This is one of the most important parts of our work. The interpretation of the different pupillary troubles has supplanted a large number of hypotheses, almost all of which are based on lesions of the neural axis. So, it is very probable that most of our readers have been very skeptical when they saw us attribute these troubles to lesions of the ganglion and ciliary nerves. We hope, however, to cause those who will do us the honor to follow us to share in our convictions.

In the first place, all of these troubles, especially the Argyll-Robertson pupil, may be caused by extrinsic causes—penetrating wounds or foreign bodies in the orbit; compression, especially by hemorrhages, simple contusion of the eyeball, etc. Generally they disappear after a longer or shorter time, and they are not due to the accidental coexistence of an intrinsic cause. They can be explained only in two ways: By a lesion of the orbital ends of the motor oculi or sympathetic fibers, or by a lesion of the ciliary nerves or ganglion. In either case, a central lesion cannot be invoked. Furthermore, a simple laceration of the iris cannot cause dissociation.

In the great majority of cases these pupillary troubles have an intrinsic origin and are attributed to an infection or general intoxication. We will discuss their pathogeny. The strictly peripheral nature of pupillary deformity should not be doubted. The motor oculi and the sympathetic do not pass through the ciliary ganglion, but terminate there, and any lesion of either of the diastaltic arcs affects the entire muscular apparatus of the pupil. Now, the deformity is due to an inequality in the contraction of the segments of the sphincter, and that can be explained only by changes in the ciliary motor cells or their efferent fibers, whose distribution is known. We might argue whether the lesion was in the motor cells or in their axis cylinder extensions, but the important fact is that the peripheral neuron alone is affected. It is easy to understand that the deformity can be produced only while the sphincter is still mobile; it disappears in proportion as the immobility increases.

It has been attempted to explain the contraction by a lesion of the cord, and to make use of the frequence of this pupillary trouble in tabes. This supposition is untenable. for this miosis has no characteristics as distinct as that which follows a lesion of the sensitivomotor arc. Bach supposes an alteration of his spinal center inhibitory to luminous dilatation. We have already expressed our opinion of this hypothesis formulated by its author to explain certain facts incompatible with the commonly accepted theories. The contraction may appear instantly, but it is usually preceded by a longer or shorter period of deformity and rarely exists alone. It is generally accompanied by pupillary immobility. It can be explained only by a lesion of the ganglion cells, whose tonic actions no longer obey the inhibitions of the higher centers, but is greatly increased, for the contraction is often very pronounced, sometimes maximal, i. e., much greater than that obtained by stimulation of the motor oculi.

Pupillary inequality has no individual existence. It is always the result of a trouble which is unilateral or more accentuated on one side. We have seen that a lesion of the centripetal paths or the reflex centers always affects both pupils alike. Anisocoria, therefore, is always the sign of a lesion involving one of the centrifugal paths or the peripheral system. As was said above, we have limited the meaning of this term to inequalities of the latter origin.

It is the dissociation of reflexes, especially the Argyll-Robertson pupil, which has caused most pathogenic hypotheses. As we could not discuss all of them, we will group them according to the portion of the iridomotor nervous system blamed.

Some authors, having observed the frequent presence of the Argyll-Robertson pupil in tabes and its coexistence with contraction, have located its causal lesion in the cervical cord. This localization cannot be justified, for the interruption of the sensitivomotor path is characterized by the persistence of the sensoriomotor reactions alone.

Bach locates the lesion in his inhibitory spinal center or the fibers which arise there. We think there is no need to insist on the small value of this hypothesis, which rests on nothing positive.

Everybody agrees in admitting that the loss of the luminous reaction is independent of lesions of the optic nerves. Blindness does not modify the pupillary trouble which we are now studying. Some authors claim a lesion of the centripetal path between the primary optic centers and the nucleus of the III nerve. This localization is inadmissible for several reasons. It is necessary that the lesion would be either bilateral or total, for whatever the decussation might be, a partial interruption could not prevent the luminous reaction from being produced on both sides. Furthermore, it would not be possible to explain the cases of unilateral dissociation, which have become more and more numerous as they have been searched for. Finally, in these cases, the presence of the consensual reaction on the healthy side could not be understood. (P. Marie.)

Other authors claim that the lesion lies in the iridomotor nucleus. But it is known that a change in the reflex center always affects equally both pupils, which would not allow the explanation of unilateral cases. Furthermore, there is never observed the dissociation of the two sensoriomotor reactions, which are always lost simultaneously.

This last remark applies also to the localization of the causal lesion along the centrifugal path. The pupillomotor fibers of the III nerve are not specialized and act indifferently for both sensoriomotor reactions and for cathypnic contraction. Furthermore, we could not understand the so frequent association of the Argyll-Robertson pupil with miosis.

Finally, the dissociation of the sensoriomotor reaction is very frequently accompanied by loss of reflex to pain and the other sensitivomotor reflexes. In all the preceding hypotheses it is necessary to suppose the concomitant existence of two lesions, one affecting the mesocephalic and the other affecting the cordal system.

On the other hand, a lesion of the ganglionic cells explains everything. The tonic action of the motor cells is modified and is no longer obedient to certain orders from the reflex arcs. This hypothesis also applies to all pupillary troubles which we have discussed in this chapter, whether intrinsic or extrinsic, and in the former case anatomopathologic arguments of great value may be invoked.

Histology has never proven the existence of lesions localized to the diastaltic arcs, and only inconstant and always secondary changes have been found at the suspected places (Bernheimer, Marina). On the other hand, in all cases of tabes or general paralysis which he examined, Marina found lesions (degeneration, chromolysis) in the ganglion and ciliary nerves whenever pupillary trouble existed during life. When these were absent there were no lesions, and when they were unilateral the lesions were observed only on the affected side. It was not a secondary degeneration, for we know that lesions of the motor oculi always stop at the ganglion and never affect the cells. These investigations of Marina have a prime importance, for they are based on very exact facts and not on hypotheses. Nevertheless, no attention has been paid to them, and in France, at least, since their publication (1899-1901) we have continued to talk about central localizations.

In favor of this localization of causal lesions in the ciliary ganglion, it is necessary to call attention to the researches of Dupuy-Dutemp (1905). In cases of tabes and general paresis with pupillary troubles, especially the Argyll-Robertson pupil, this author frequently found atrophic lesions of the iris, clinically shown by an effacing of the markings on the anterior surface. When the atrophy affected a segment, the pupil was deformed, and only the healthy portions reacted. When there was no pupillary trouble, or when this depended on a lesion of the motor oculi or sympathetic, there was never iridal atrophy. This last can be explained only by "an alteration in the peripheral ciliary neuron," and we have already stated that this cannot be secondary to lesions of higher neurons.

Pupillary sluggishness is only a beginning stage of loss of the reflexes, and the lesions, we have claimed, allow us to understand its pathogeny easily. Successive loss of reflexes leads to complete immobility. The ganglionic cells no longer obey the stimulation or inhibition of the higher centers.

To sum up, we regard these pupillary troubles as the consequence of lesions of the cells of the ciliary ganglion. These lesions do not cause extensive destruction of the motor cells, the result of which would be the total paralysis of the sphincter (maximal mydriasis), but cause a modification of their functions. Their tonic action upon the sphincter persists, but it gradually loses its power of obeying the different excitomotor or inhibitory orders of the spinal or mesocephalic centers (sluggishness, dissociation, deformity) and tends to become motionless (pupillary immobility).

These pupillary troubles may become modified by a lesion situated below the ganglion, i. e., affecting the ciliary nerves. An example will make us understand this better: We have observed a woman of 47 years, syphilitic and hemiplegic for a long time, who presented on both sides, a dissociation of reflexes (Argyll-Robertson pupil and loss of reflex to pain) without inequality. She had, furthermore, a bilateral chronic glaucoma. In the right eye she had an attack of acute glaucoma, and immediately an almost maximal mydriasis appeared. So the intraocular compression of the ciliary nerves caused, as is the rule, the paralysis of the sphincter.

Conversely, it is interesting to note what becomes of these same pupillary troubles when they are complicated later by a lesion lying above the ganglion, i. e., affecting the mesocephalic or spinal systems. To take a concrete case, we might ask what would happen to such pupils following a complete paralysis of the motor oculi. The researches which we have made on this subject in the literature have resulted negatively, and we have found a great obscurity on this question. Many authors attribute to a paralysis of the motor oculi pupillary troubles which are manifestly due to a lesion of the peripheral system. These are the ones who speak of paralysis of the III nerve with contracted pupils or with preservation of the accommodation-convergence reaction! In the text books the authors are content to note the transitory and minute character of motor oculi paralyses in tabes and general paresis, and state that the internal muscles are rarely affected. Is this immunity not an apparent one caused by pre-existing lesions of the ciliary ganglion which no longer allow the sphincter to react to stimuli and paralyses of the higher centers? To answer this question, we have made an inquiry, and Professor Abadie, whose ability in nervous diseases is well known, has communicated the following case: A tabetic, with a distinct Argyll-Robertson pupil on both sides, without pupillary inequality, was attacked by a distinct complete paralysis of one of the motor oculi. The reaction to accommodation was abolished on that side, and the pupil became slightly larger and a little deformed. Thus, in this case, the pupil was not dilated, as is the rule in complete paralyses of the III nerve. We have already stated that blindness does not affect pupillary troubles. It is the same in the different psychoses. There is no relation between the diameter of the pupil and the mental state of the patient (excitation or depression). We might say that a new lesion, lying above the ganglion, has no effect on pre-existing pupillary troubles. Their action is confined to suppressing reflexes which have not yet been lost.

(d) *Action of Toxins.* Duchenne, of Boulogne, has already noticed that the pupils of tabetics react more weakly to the action of miotics and mydriatics. Toulouse and Vurpas have recently studied this weakness in general paretics and found that the trouble was very early. They advised the use of very weak collyria (1/10,000). We do not agree with them that this weakness is due to cerebral lesions, which, for that matter, are rare in tabes. We think the cause should be sought rather in the changes in the cells of the ganglion, whose increased tonic action allows the nerve endings in the sphincter to resist for a long time the stimulating or paralyzing action of the poisons.

(e) *Signification.* The contraction, and especially the Argyll-Robertson pupil, have long been considered as characteristics of tabes. Likewise deformity and pupillary inequality have been assigned to general paresis. After Fournier showed that tabes and general paresis were almost always, if not always, manifestations of syphilis, it was noticed that all these pupillary troubles could be observed in other than these two diseases, and Babinski performed the very great service of showing that the Argyll-Robertson pupil "is a sign of acquired or hereditary syphilis, almost if not quite pathognomonic" (1899). Since then, several works have confirmed Babinski, and, in order to make them complete, we must admit that other pupillary troubles (sluggishness, immobility, miosis, deformity and inequality) have the same significance as dissociation of reflexes, and are only different manifestations of the same lesion. Can syphilis alone cause this lesion of the ganglion? These troubles have been observed in other general affections (tuberculosis, alcoholism) which, according to certain authors, can produce only the paralytic syndrome. The question is a very delicate one, for we can always suspect an unknown or hidden syphilis, and, on the other hand, we have not yet agreed on the absolute value of certain laboratory reactions lately proposed for the diagnosis of syphilis. Nevertheless, it is certain that these troubles can be produced, in addition to intrinsic causes, by traumatism and compression.

C. Ganglifuge Path.—After what we know about the pathology of nerve cells we can understand that the lesions of the ganglion react on the axis cylinders which constitute the ciliary nerves. We will not discuss these secondary lesions.

(a) *Extraocular Portion.* The primary lesions of the extraocular portions of the ciliary nerve are always traumatic and are usually accompanied by considerable laceration. We know them only by laboratory experiments. If the nerves are only partially affected, there results a pupillary deformity.

(b) *Intraocular Portion.* We have seen that contusion of the ball may cause ocular troubles by lesion of the ciliary system. Certain ones may be attributed to a lesion of the ganglion. Others, however, are caused by a contusion of the nerves at the posterior pole of the eye, during their passage through the sclera. This hypothesis, proposed by Ohm, has been confirmed by the investigations of Basso. It is not necessary, therefore, to always blame an invisible rupture of the sphincter.

The mydriasis, which may be maximal, whether primary or secondary, has been explained in different ways: (1) By ischemia of the iris, due to augmentation of the tension. That would favor mydriasis, but we do not believe would be sufficient to cause it. (2) By an excitation of the sympathetic. But, in addition to the fact that the syndrome of Basedow has never been observed in glaucoma, we cannot understand how a lesion affecting only the centrifugal path could produce indefinitely an excitation and never a paralysis. (3) By the compression and paralysis of the ciliary nerves. This hypothesis allows the explanation of all the other symptoms of glaucoma.

Finally, in fulguration the most different pupillary troubles have been observed. Some are probably due to retinal dazzling, but others are certainly caused by peripheral nerve lesions, the more so since they are observed at the same time as paralytic or spastic troubles of neighboring muscles.

## IV.

Notice should be taken that we have not spoken of hippus. We will pay no attention to the anatomic substratum of this pupillary trouble and the hypotheses proposed to explain it, and confine ourselves to one definite fact. We have been unable to classify it in the group above, and will discuss it in a special chapter. We will finish by saying a few words about hysteric troubles whose pathology is equally unknown. But this chapter is only provisional and will disappear in a more or less distant future, when the progress of anatomy and pathologic physiology will allow us to understand the causes of this trouble and permit us to classify them.

HIPPUS.—We will define hippus as a pathologic state characterized by continual pupillary movements of great amplitude. This definition allows the elimination of the oscillations which have improperly been called *physiologic hippus.* The latter are of two kinds: (1) Oscillations of sensitivomotor origin, which represent all the variations of sensitive, sensorial or psychic stimulation of the cerebral cortex. (2) Oscillations of a sensoriomotor origin, which are characterized by the accommodation of the pupillary diameter after a strong contraction to light or by irregular dilatations, which are observed in asthenic troubles. These movements, which always in healthy people have a small amplitude, may become very important in certain pathologic cases, and they have been confusd with true hippus.

*Hippus* properly so-called, which is always pathologic, is a rare phenomenon. The known cases may be divided into two classes, according to whether these oscillations are or are not regular.

(a) *Rhythmic Hippus.* There are some cases of respiratory hippus, the oscillation being clearly due to thoracic movements. The pupil dilates during inspiration and contracts abruptly at the beginning of expiration. The attempt has been made to explain this by the influence of blood pressure, but in two or three cases where the autopsy was made, there was found a neoplastic or inflammatory infiltration of the posterior mediastinum and pleura. It is there simply a case of compression of the sympathetic, causing at each inspiration a stimulation with pupillary dilatation.

There are likewise cases of *hippus due to congenital paralysis of the motor oculi,* but none has had anatomic control. These paralyses, which were incomplete and unilateral, were caused by a subnuclear lesion, and light had no influence on the oscillations. Is it necessary to blame the cordal system here or the motor oculi? These oscillations have been compared to those of oculomotor paralyses in the course of cure. It is necessary to state at once that here these paralyses are congenital and have no tendency to become less. Furthermore, of what does this hippus of a convalescing motoroculi paralysis consist, a thing which all authors cite, but no one has described? In a number of analogous cases we have, indeed, observed oscillations, but they fell in the class of physiologic oscillations and have no relation with hippus, especially of the rhythmic kind.

Finally, it is necessary to create a category to class the case of *voluntarily caused hippus* of H. Coppez.*

A child produced at will a horizontal nystagmus, during which a hippus was observed whose rhythmic oscillations had no relation with those of the ball.

(b) *Arhythmic Hippus.* This form is characterized by irregular rapid movements, whose amplitude varies from one movement to another, the two pupils being able to oscillate without synchronism. It has been observed in a certain number of affections of the cerebrospinal axis, and most authors consider it as analogous to the exaggeration of the tendon reflexes. The oscillations are independent of the photoregulator reactions and are apparently due to the cordal system.

To resume, as Bach justly says, all attempts at pathogenic interpretation would be fruitless, because of the lack of exact clinical observations, and especially of anatomic control.

*Hysteric Troubles.* When one approaches the study of hysteria, it is necessary to accept the observed facts with the greatest circumspection. The recent discussion in the Société de Neurologie resulted especially in establishing that the stigmata and the sensitivo-sensorial troubles of this neurosis are simulated or imagined. In pupillary troubles, the doubt should be extreme, because of the facility of the patients for using secretly the mydriatics and miotics, especially cocain and its variations. The pupillary troubles of hysteria may be divided into two classes, according as they are primary or secondary.

(a) *The secondary troubles* are not themselves of an hysteric nature, but are the consequences of the functional troubles of the neurosis. They find their place in our classification, and we will proceed to discuss them.

In the course of a convulsive attack, the pupils are contracted and immobile during the epileptoid period, since the loss of consciousness is absolute. It is the cathypnic contraction, symptomatic of cortical paralysis. In the succeeding stages, characterized by intensity of the psychic acts, the fundamental dilatation is considerable. After the crisis the nervous system is very depressed, and the pupil shows asthenic troubles.

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*H. Coppez. Soc. belge d'Opht., 1907.

If an anesthetic area or one so-called is stimulated, the reflex to pain is produced normally. The stimulus is transmitted to the cortex, which is an argument in favor of simulation or suggestion.

In hysteric blepharospasm with photophobia, the bilateral pupillary contraction is due to a luminous hyperesthesia.

Hysteric amblyopia has no particular action on the pupillary reflexes. Unilateral amblyopia does not modify the luminous reaction. As to the bilateral amaurosis, the observations are very contradictory and often improbable. It seems that here, too, the reaction is produced.

(b) The existence of *primary hysteric troubles* has been and still is being disputed. Some authors deny it, in the name of principles which, however, are very dubious. Others explain all cases by an unknown organic lesion or by the action of toxins unknown to the observer (Brinswanger, Sauvineau). Most of the observations are suspicious. The authenticity may be doubted of the rare cases of hysteric miosis which have been published, for all have been accompanied by a contracture of accommodation. It is the same for most cases of mydriasis. Outside of those which have manifestly an organic cause, some are maximal, with cycloplegia, which allows the supposition of the secret use of atropin, and in others, there is the suspicion of cocain. Nevertheless, a very small number of cases cannot be thus explained. We will cite especially the observation* which we published in 1907. It was a case of maximal mydriasis, with normal accommodation, existing for at least fourteen years, seen by several confreres during that time. Instillation of a single drop of water or the application of a weak galvanic current was sufficient to cause the pupil to contract, which afterwards gradually returned to its former state. The action of toxins on the sphincter and ciliary muscle was normal. We will add that the patient presented and still has certain troubles which are classed among the manifestations of the neurosis. This case cannot be explained by an organic lesion or by the use of any mydriatic. Certainly, we cannot apply the definition of hysteria given by Babinski. But, whatever be the label attached to it, can be understood only by admitting an excitation *sine materia* of the sensitivomotor centrifugal path or a paralysis, equally *sine materia,* of the peripheral innervation.

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*Ch. Lafon et Teulieres, Nouvelle Iconographie de la Salpetriere, 1907.

As a conclusion to this paper, we will propose certain rules for the localization of the causal lesion of a pupillary trouble.

(1) Any lesion, stimulus or interruption, affecting a point on one of the two diastaltic arcs, can disturb only those movements normally caused by that arc.

(2) A unilateral or partial stimulus of a centripetal path causes an equal trouble in both eyes. On the other hand, an incomplete interruption produces no pupillary trouble at all.

(3) The destruction of a reflex center causes bilateral loss of the pupillary movements caused by the affected arc. Clinically, stimulation of reflex centers has never been observed.

(4) Interruption of a centrifugal path causes abolition of all movements caused by the affected arc on the corresponding side only. Likewise, stimulation causes troubles only of these movements.

(5) Excitation of the ciliary nerves or ganglion may cause a maximal contraction of the corresponding pupil; their paralysis causes an equally maximal dilatation. On the other hand, cellular lesions of the ganglion have been observed, which are characterized by a progressive loss of the power to obey excitomotor or inhibitory orders given by the two diastaltic arcs. Following the evolution of these lesions, we have sluggishness of the reflexes, their dissociation or pupillary immobility. Their unequal distribution in the nerves causes deformity, and their different degree in the two ganglia causes pupillary inequality.

# MEDICAL ADVERTISING IN REMOTE TIMES—AN HISTORICAL SKETCH.

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Of the various improvements and advances we have acquired with the birth of the twentieth century none occupies a more prominent position than modern advertising. New methods, novel schemes and ingenious devices have been resorted to in the extreme to laud the virtues of the merchant and his wares. In no line of business is this carried on to a greater extent than in the patent medicine trade and its allied calling, medical quackery. Offensive as these various ubiquitous announcements and placards may be to our sensibilities, we cannot but regard them as having a fixed place in the history and customs of the people, and if we reflect further we cannot help seeing in this bastard literature a means of determining historical identity.

In the very early days, the only literature accessible to the common people was made up of the egotistic proclamations of the Kings of those times, truly advertisements. Later, the signs displayed over shop doors, and still later the signs devised by innkeepers to aid them in disposing of their wines, etc., constituted advertising mediums. Close on these epochs followed the lost and found, help wanted, and the medical advertisement. It is the development and influence of the latter that will be traced in this brochure aided by excerpts from various and innumerable writers upon antiquarian subjects.

Perhaps the earliest medical advertisement is to be detected in the announcement notice of the opening of the baths at Pompeii, which, like others of the same period, was written on tablets and affixed to the pillars of the buildings. If we consider hydrotherapy as practiced at this time, as a therapeutic measure, then this must be given an honorary place in medical advertising. The public announcements of the Romans were made by means of signs, suspended or painted on the walls, which employed to a great extent figures of speech. The sanitary ideas of the time can be seen at a glance by a reference to the sign on which were painted two sacred serpents indicating that nuisances were prohibited. The artificers of Rome were given to announce their trades by means of their implements used as signs, and we find that the physicians and surgeons of that period were indicated by a cupping glass. These signs were also sculptured on their tombstones.

Omitting any reference to the Chinese, who, it would seem, have invented everything worth while, we find that the original newspaper is to be found in Italy. Passing by the pioneers in advertising, namely, Darius and Rameses II, we come to the finished product in the person of Julius Caesar, who pressed into service every blank wall in Rome for the purpose of circulating the news regarding his own particular prowess in the several lines of work he felt inspired to perform. But even apart from this, we find that in the latter part of the sixteenth century there was published in Venice a series of large written sheets which served as bulletins of the news of the day. They were called *"Gazetta"* and were displayed in a large public room, where the populace doubtless greeted them as we do the baseball scores of to-day. It continued for sixty years or more, and its issues are preserved in the museum at Florence. It is not certain that some medical announcements did not find their way into its pages.

With the invention of the printing press and the institution of pamphlet newspapers, advertising began to crystallize. The *"English Mercurie"* was the first printed paper, and appeared in London in 1588, and being a religious paper it is scarcely believable that it did not contain some reference to somebody's kidney cure, but there is no data at hand to support this contention. The *"Mercurius Politicus,"* a Scottish newspaper, which made its first appearance in 1653, at Leith, published in its columns September 30, 1658, the following advertisement:

> "That Excellent, and by all Physicians approved China drink called by the Chineans *Teha*, by other nations *Tay*, alias *Tea*, sold at the Sultaness Head Cophee-House, in Sweeting's Rents, by the Royal Exchange, London."

This is of great interest to the medical public, since it marks the beginning of an area in which the sanction and recommendation of physicians were used for commercial purposes. Unfortunately, the end of this era has not yet arrived. But preceding this announcement, Thomas Garraway, a tobacconist and coffee-house keeper in Exchange Alley, London, retailed tea in 1657, and claimed it to be a panacea for all the ills of humanity.

Coffee had been introduced in London by a Turkey merchant named Edwards in 1652, whose Greek servant, Pasqua Rosee, established a coffee-house and announced the various properties and virtues of the new drink by means of curious handbills, one of which is yet preserved in the British Museum. In these handbills, he directs how the drink shall be prepared and states that it aids digestion. Further, he says:

> "It much quickens the spirits and makes the heart lightsome; it is good against sore eyes, and the better if you hold your head over it and take in the steam that way. It suppresseth fumes exceedingly, and is therefore good against headache and will very much stop any defluxions of rheums that distil from the head upon the stomach, and so prevent and help consumption and cough of the lungs.
>
> "It is excellent to prevent and cure the dropsy, gout, and scurvy. It is known by experience to be better than other drying drink for people in years or children that have any running humours upon them, as King's Evil, etc. It is most excellent remedy against the spleen, hypochondriac winds, and the like. It will prevent drowsiness and make one fit for business, if one have occasion to watch, and therefore you are not to drink of it after supper, unless you intend to be watchful, for it will hinder sleep for three or four hours. It is observed that in Turkey, where this is generally drunk that they are not troubled with the stone, gout, dropsy, or scurvy, and that their skins are exceeding clear and white. It is neither laxative nor restringent."

It is also curious to note that chocolate was introduced into England about this same period, but never gained the popularity of the other two beverages. Germany had become acquainted with it as early as 1624, at which time one Johan Frantz Rauch took upon himself the trouble of writing a treatise condemning the beverage.

The physician to James I, of England, was regarded as the highest medical authority of his day, and not a little of his fame is to be attributed to a medical ale he concocted known as "Dr. Butler's Ale." As a mark of public esteem (?) his picture was used as a sign for public houses for a hundred years or more Perhaps the last "Butler's Head" sign was to be seen in a court leading from Basinghall into Coleman street, London. This indicates very clearly the convivial spirit of that period.

From various sources we pick up fragments of information bearing upon this subect of advertising which, while not directly connected, serve to enlarge our intelligence. Thus, an old German work on Alchemy published in 1625 shows a plate in which a dragon is pictured devouring his own tail. Some of the reading matter in explaining the meaning of this plate goes on to attribute to the dragon most remarkable medicinal properties. Consequently an investigator in this subject is not at all surprised to find the dragon used by both German and English apothecaries as a sign of their trade. The salamander, on account of its non-combustible properties, was used by chemists and apothecaries also for advertising purposes. The celebrated apothecary firm of Godfrey and Cooke, in London, adopted the Phoenix as their trade emblem and continued its use for a great number of years. In the latter part of the seventeenth century apothecaries frequently used the likeness of the bulky figure of Paracelsus as their sign; still later the mortar and pestle.

In May, 1657, there appeared in England, a newspaper which assumed the title of "*The Public Advertiser*," and such it was, since it scolumns were devoted almost exclusively to advertisements, book notices, arrivals and departures, marriages, births and deaths. In this we can see a crude attempt at collecting health statistics. To be sure, at a much earlier date efforts had been made, but not in this manner. Reference may be made, in passing, to the Bills of Mortality, first established during the visitation of the plague in London in 1592. These were continued throughout subsequent visitations and constitute perhaps the earliest mortality table.

The ravages of smallpox are to be recognized through the medium of early advertising, since it was the custom in describing a lost or runaway servant or other person, to specify that he or she was pock-marked, pock-fretted, pock-holed, pitmarked, etc., though why this should be done when this condition was so common to the population cannot be imagined. The following, taken from the "*Mercurius Politicus*," May, 1658, will serve to illustrate this very well indeed:

> "A black-haired Maid of middle stature, thick set, with big breasts, having her face full marked with the small-pox, calling herself by the name of Nan or Agnes Hobson, did upon Monday the 28th of May, about six o'clock in the morning, steal away from her ladies house in the Pal-Mall, a single coloured wrought Tabby gown of Deer colour and white; a black striped Sattin gown with four broad bone-black silk laces, and a plain black watered French Tabby gown."

This notice goes on further to relate the various other articles said to have been removed by this black-haired maid, which concerns medicine not in the least. Other notices of this period were more descriptive and entered into detail with no honeyed phrases. The newspapers of the seventeenth century constitute good clinical reports of the deformities of that period, most of which, to be sure, were the result of disease.

The visitation of the plague, in 1665, as in previous visitations, drove from the city of London all those who could well arrange to leave it. In order, however, to leave the city at this time it was necessary to obtain bills or licenses, which were issued by the Lord Mayor. This was inaugurated as a means to prevent the spead of the contagion. In cases in which those who had not been given clean bills of health had fled from the city, notices such as the following were posted:

> "Nicholas Hurst, an upholsterer, over against the Rose Tavern, in Russell St., Covent Garden, whose maid servant dyed lately of the Sickness, fled on Monday Last out of his house, taking with him several Goods and Household Stuff and was afterwards followed by one Doctor Cary and Richard Bayle with his wife and family, who lodged in the same house; but Bayle having his usual dwelling house in Surrey. Whereof we are commanded to give this Publick Notice, that diligent search may be made for them and the houses in which any of their persons or goods shall be found may be shut up by the next Justice of the Peace, or other of His Majesty's Officers of Justice, and notice immediately given to some of His Majesty's Privy Councill, or to one of His Majesty's Principal Secretaries of State."

As a further evidence of this manner of advertising may be quoted the following, which appeared in the *Intelligencer*, June 22-30, 1665:

> "This is to certify that the master of the Cock and Bottle, commonly called the Cock Alehouse, at Temple Bar, hath dismissed his servants, and shut up his house for this long vacation, intending (God Willing) to return at Michaelmas next, so that all persons who have any accounts or farthings belonging to the said house, are desired to repair thither before the 8th day of this instant, July, and they shall receive satisfaction."

The very alert journalism of the day did not hesitate to publish all manner of items bearing upon the medical aspect of the visitation. The *London Gazette*, May 10, 1666, published quite an extensive array of precautions for the prevention of the dreadful affection. Hundreds of specifics were advertised and sold; but the only effective one was that which made its appearance unannounced, the great fire, which began in 1666. The only advertisements that survived this calamity were those of quack nostrums. Among the innumerable advertisements that appeared just prior to the plague may be mentioned the following, which graced the columns of "*The Intelligencer,*" September 4, 1665:

> "Monsieur Augier's famous Remedies for stopping and preventing the plague having not only been recommended by several certificates from Lyons, Paris, Tholouse, &c., but likewise experimented here by special directions of the Lords of His Majesty's Most Honourable Privy Council, and proved by Witnesses upon oath, and several Tryals, to be of singular virtue and effect, are to be had at Mr. Drinkwater's at the Fountain in Fleet Street."

Among other interesting advertisements that appeared during this same period, the following is worthy of passing remark:

> "The Late Countess of Kent's powder has been lately experimented upon divers infected persons with admirable success. The virtues of it against the Plague and all malignant distempers are sufficiently known to all the Physicians of Christendom, and the Powder itself prepared by the only person living that has the true Receipt, is to be had at the third part of the ordinary price at Mr. Calvert's, at the Feathers in the old Pall Mall near St. James's."

Another advertisement having a similar purpose appeared in 1665, in which the head of Ben Jonson figures in the locating of the establishment in which the wonderful medicine was to be had. It is interesting to note, in passing, these various means which were taken to designate the public houses and shops during the seventeenth century in London. The advertisement referred to runs as follows:

> "Whereas Thomas Williams, of the society of real and well-meaning Chymists hath prepared certain Medicynes for the cure and prevention of the Plague, at cheap rates, without Benefit to himself, and for the publick good, in pursuance of directions from authority, be it known that these said Medicynes are to be had at Mr. Thomas Fidges, in Fountain Court, Shoe Lane, near Fleet Street, and are also left by him to be disposed of at the Green Hall, within Ludgate, the Ben Jonson's Head near Yorkhouse."

Passing along a little further, we find that physicians, of a kind, were early inclined to bid for notoriety and trade through the medium of the newspapers, as may be seen by a glance at the following extract from a notice published by the *City Mercury*, March 30, 1673, outlining its scope of business:

> "Any person that has anything to insert in it, as titles of books, houses or land to be lett or sold, persons removing from one place

to another, things lost or stole, physicians' advertisements, or inquiries for houses or lands to be lett or sold, for places or for servants, &c., may bring or send them to the publisher, Tho. Howkins, in George Yard in Lombard Street, London, who will carefully insert them at reasonable rates."

A combination of trades being common to the seventeenth century, we are not at all surprised to find John Houghton, F. R. S., an apothecary, combining this vocation with the tea, coffee, and chocolate business, and in addition editing, in 1682, a paper entitled *"A Collection for the Improvement of Husbandry and Trade,"* which is of considerable interest from the fact that spectacles were advertised, showing that the refracting optician was in existence at this time. The following, taken from this paper, shows the style of advertisement current, and the interest of the editor in his patrons:

"If anyone wants a wet nurse, I can help them, as I am informed to be a very good one."

Another, taken from another issue of this Collection, shows its relation to this discourse, without explanation:

"For a friend, I can sell very good flower of brimstone, etc., as cheap or cheaper than any in town does and I'll sell any good commodity for any man of repute if desired.

"I find publishing for others does them kindness, therefore note:—I sell lozenges for 8d. the ounce which good drinkers commend against heartburn, and are excellent for women with child, to prevent miscarraiges: also the true lapis nephriticus which is esteemed excellent for the stone by wearing it on the wrist."

Houghton also published the addresses of the principal shops and residences of the leading doctors, which list, in June, 1694, showed that there were 93 doctors in and about London.

The lauding of quack and proprietary remedies, which we so loudly deprecate at the present day, is by no means modern. If we go back a few years beyond the period of which we have been speaking, we find abundant evidence to support this statement. Thus, in the *Mercurius Politicus,* in November, 1660, we note the following:

"Gentlemen, you are desired to take notice, That Mr. Theopilus Buckworth doth at his house on Mile-End Green, make and expose to sale for the public good, those so famous Lozenges or Pectorals, approved for the cure of Consumption, Coughs, Asthmas, Hoarseness, Strongness of Breath, Colds in General, Diseases incident to the Lungs, and a Soveraign Antidote against the Plague, and all other contagious Diseases, and obstructions of the Stomach: And for more convenience of the people, constantly leaveth sealed up with his coat of arms on the papers, with Mr. Rich. Lowndes (as formerly) at the sign of the White Lion, near the little north door of Pauls Church; Mr. Henry Seile, over against St. Dunstan's Church in Fleet Street; Mr. William Milward, at Westminster Hall Gate; Mr. John Place, at Furnivals Inn Gate in Holborn; and Mr. Robert Horn at the Turk's Head at the entrance of the Royal Exchange, Booksellers, and no others."

"This is published to prevent the designs of divers Pretenders who counterfeit the said Lozenges, to the disparagement of the said Gentlemen, and the great abuse of the people."

One of the most interesting events in the history of quackery is "touching for King's Evil," since it involved so much resort to the press and prints of the time in which it was practiced. Accordingly a few words concerning it are not inappropriate in this connection. Thus the following proclamation, issued April 22, 1634, conveys an idea of the medical intellect of the day:

"*By the King.*—A Proclamation, appointing the time when his Majestie's subjects may approach to the Court for cure of the disease called King's Ewill;

"Whereas, by the grace and blessing of Almighty God, the Kings and Queens of this Realme, by many ages past have had the happiness, by their sacred touch, to cure those who are afflicted with the disease called the King's Ewill; and his now most excellent Majesty, in no less measure than any of his Royall Progenitors, has had blessed successe therein; and, in his most gracious and pious disposition, is as ready and willing as any King or Queen of this Realme ever was in any thing to relieve the distresses and necessities of his good subjects; yet in his princely wisdome, foreseeing that in this (as in all things) order is to be observed, and fit times are necessary to be appointed for performing this great work of charity; and taking into his Royall consideration the great inconvenience which may happen, both in respect of the temper of the season, and in respect of contagion, which may happen in this near accesse to his Majestie's sacred Person, when the season of the year is growne warm; Doth hereby publish and declare his Royal pleasure to be, and also will and command that from the time of publishing this proclamation, no person or persons whatsoever do attempt to repair to his Majestie's Royall Court, to be healed of that disease, before the feast of All Souls now next coming; and to the end that all his loving subjects may better take notice of this his Majestie's pleasure and command, his pleasure is, that this proclamation be published and affixed in some open place in every market town of this realme."

The great vogue of this practice can be appreciated when it is remembered that in the year 1682, the king touched 8577. The coin that accompanied the touch doubtless had something to do with its popularity.

A further instance of the credulity of the populace and the current superstition is exemplified in the announcement that appeared in the *Public Intelligencer*, May, 1664:

> "Whitehall, May 14, 1664. His Sacred Majesty having declared it to be his Royal will and purpose to continue the healing of his people for the Evil during the Month of May and then to give over till Michaelmas next, I am commanded to give notice thereof that the people may not come up to Town in the interim and lose their labour."

The disease King's Evil referred to in these pages is also described in medical literature as scrofula and glandular tuberculosis. Even as late as the days of the Puritans, the touch of the King was believed to have a curative influence on this disease. With the death of Anne in 1714, the practice ceased in large part.

The King was not the only person who was accredited with the power of curing this disease. The greatest of these other healers was one Valentine Greatrakes. This very remarkable man was born in the reign of Charles I, in Waterford, Ireland, and came from a very good family. He was educated at Lismore School and Trinity College, Dublin. A portion of his education was received from Mr. John Daniel Getseus, a German, and later a minister named Stoke Damerel.

After spending several years in England he returned to his native country, Ireland, where he retired to the Castle of Caperquin, where he remained from 1624 to 1625. He was then successively a soldier, clerk, registrar of plantations, and Justice of the Peace.

Some time in the year 1862 he conceived the idea that he was possessed of the miraculous power of removing disease by stroking the affected parts with the hand. His first cure occurred in the person of one Wm. Mayer, and was followed by others in rapid succession. All was not serene for Greatrakes, as it was not long before he was cited in the Bishop's Court at Lismore, and, not producing a license for practicing, he was prohibited from laying his hands on any person for the future. As in all subsequent ages, this was reason why he should be in greater demand, and he continued his work despite protests from certain quarters. He came to England in 1665, at the request of the Earl of Orrery, in order to cure the Lady of Lord Viscount Conway of Ragley, in Warwickshire, of a continual violent headache. After a month's manipulating, he failed completely to cure or even relieve his distinguished patient. However, he succeeded in other cures during his stay. A "Declaration of his Cures in Warwickshire" was published by Mr. Stubbs (who was a witness to them) at Oxford, in quarto, in which the author maintained:

> "That Mr. Greatrakes was possessed of a peculiar temperament, as his body was composed of some particular ferments, the effluvia whereof being introduced, sometimes by a light, sometimes by a violent friction, restore the temperament of the debilitated parts, regenerate the blood, and dissipate all heterogeneous ferments out of the bodies of the diseased, by the eyes, nose, mouth, hands, and feet."

This publication was a letter addressed to the Honorable Robert Boyle, Esq., who, in a private letter to the author, expressed his displeasure at being addressed so publicly on this matter. However, Mr. Boyle was soon brought to an appreciation of Mr. Greatrakes' ability. This extraordinary man afforded considerable material for the press, and numerous pamphlets were published pro and con. One, in particular, supposed to have been written by Mr. David Lloyd, reader of the charter house, under the title of "Wonders no Miracles; or Mr. Valentine Greatrakes' Gift of Healing examined upon occasion of a sad effect of his touching a young Lady, March 7th, 1665, at one Mr. Cressell's house, in Charter-house Yard, in a Letter to a Reverend Divine living near that place," the character of which is readily perceived by the formidable heading. This called forth a vindication on the part of Mr. Greatrakes, which was for the most part a list of his strange cures. However, his position was not maintained, and his reputation gradually left him, as the expectations of the multitude that consulted him were not always realized.

It is also curious to note in this connection that in 1684 one Thomas Rousewell was tried for high-treason, because he spoke with contempt of King Charles' pretensions to the cure of this disease called King's Evil.

Shakespeare takes a fling at the custom of the Monarch touching for the relief of disease in the following lines from Macbeth (Act IV., Scene 3):

> " * * * Strangely visited people,
> All swollen and ulcerous, pitiful to the eye,
> The mere despair of surgery, he cures;
> Hanging a golden stamp about their necks
> Put on with holy prayers."

Returning to the consideration of advertisements proper, we come across a shining example of the unselfish charity and philanthropy of the tradesmen in this period in the *Mercurius Politicus* in December, 1660, which reads as follows:

> "Most Excellent and Approved Dentrifices to scour and cleanse the Teeth, making them white as Ivory, preserves from the Toothach; so that being constantly used, the parties using it are never troubled with the Toothach; it fastens the Teeth, sweetens the Breath, and preserves the mouth and gums from Cankers and Imposthumes. Made by Robert Turner, Gentleman; and the right are only to be had at Thomas Rookes, Stationer, at the Holy Lamb at the East end of St. Paul's Church, near the School, in sealed papers, at 12d. the paper."
>
> "The Reader is desired to beware of counterfeits."

While the teeth were shown such great consideration, they did not monopolize attention in this regard. The obstetrician, no less than his fair patient, may be interested in the following:

> "A Present for Teeming Women, or Scripture Directions for Women with childe; how to prepare for the hour of Travel. Written first for the private use of a Gentlewoman of quality in the West, now published for the common good by John Oliver, less than the least of Saints. Sold by Mary Rothwell, at the Fountain and Bear, in Cheapside, 1663."

It was not uncommon to guide the administration of various medicaments by the several phases of the moon. This kind of practice reminds one of the modern medical almanac, so we are not surprised to find in its anologue, "The Husbandman's Practice, or Prognostication Forever," London, 1664 (quoted from Brand's Popular Antiquities, Vol. ii, p. 470), the following:

> "Good to purge with electuaries, the moon in Cancer; with pills, the moon in Pisces; with potions, the moon in Virgo; good to take vomits, the moon being in Taurus, Virgo, or the latter part of Sagittarius; to purge the head by sneezing, the moon being in Cancer, Leo, or Virgo; to stop fluxes and rheumes, the moon being in Taurus, Virgo, or Capricorne; to bathe when the moon is in Cancer, Libra, Aquarius, or Pisces; to cut the hair off the head or beard when the moon is in Libra, Sagittarius, Aquarius, or Pisces."

Nostrums having always been productive of a wide range of advertising, it is not surprising to find some curious notices regarding them in the past. Among the various nostrums of notoriety may be mentioned the celebrated "antimonial cup," endowed, it was believed, with most universal curative properties. A certain learned knight, Sir Kenelm Digby, advertised a book showing how, by means of a sympathetic powder, even the most severe wounds could be cured. No less remarkable is the cure advertised as follows:

"Small Baggs to hang about Children's necks, which are excellent both for the prevention and cure of the Rickets, and to ease Children in breeding of Teeth, are prepared by Mr. Edward Buckworth, and constantly to be had at Mr. Philip Clark's, Keeper of the Library in Fleet, and nowhere else, at 5 shillings a bagge."

This cannot help but bring to the minds of some of us, at least, those innocent days of childhood, when our fond parents and grandparents were wont to encircle our necks with bags containing asafetida and other equally odorous and obnoxious alleged preventives. What a beautiful method of obtaining isolation!

Another highly interesting advertisement of a like character appears in the *Mercurius Angelicus*, March 6-10, 1679-80, and reads as follows:

"Whereas divers Persons have lately exposed to sale a counterfeit drink called Elixir Salutis, the true drink so-called being first published by Mr. Anthony Daffy, who is the only person that rightly and truly prepares it, he having experienced its virtues for above 20 years past, by God's blessing curing multitudes of people afflicted with various distempters therewith, the receit whereof he never communicated to any person living; and these persons the better to colour their deceit, have reported Mr. Anthony Daffy to be dead, these are to certify That the said Mr. Anthony Daffy is still living and in good health, at his house in Pryean Court in the Old Bailey, and that only there and at such places as he has appointed in his printed sheets of his Elixir's virtues (which printed sheets are sealed with his seal) the true Elixir Salutis or Choice Cordial Drink of Health is to be sold."

A new medical field, that of curing insanity, is first taken up by the advertisers in the following notice, which appeared in the *Post Boy* of January 6-9, 1699:

"In Clerkenwell Close, where the figures of Mad People are over the gate, Liveth one who by the Blessing of God, cureth all Lunitck, distracted or Mad People, he seldom exceeds 3 months in the cure of the maddest Person that comes in his house, several have been cured in a fortnight and some in less time; he has cured several from Bedlam and other mad-houses in and about this City and has conveniency for people of what quality soever. No cure no money. He likewise cureth the dropsy infallibly and has taken away from 10, 12, 15, 20 gallons of water with a gentle preparation. He cureth them that are 100 miles off as well as them that are in town and if any are desirous they may have a note at his house of several that he hath cured."

While medical literature fails to give any credit to this wonderful gentleman, his confreres of the present day honor him unconsciously by using his advertisements as a model.

In the year 1700, we come across the notice of a regular physician in the *Flying Post*, January 6-9, which reads as follows:

"At the Angel and Crown in Basing-lane near Bow-lane liveth J. Pechey, a Graduate in the University of Oxford, and of many years standing in the College of Physicians in London: where all sick people that come to him, may have for Six pence a faithful account of their diseases and plain directions for diet and other things they can prepare themselves. And such as have occasion for Medicines may have them of him at any reasonable rates without paying anything for advice. And he will visit any sick person in London or the Liberties thereof in the day time for two shillings and six pence, and anywhere else within the Bills of Mortality for Five shillings. And if he be called in by any person as he passes by in any of these places, he will require but one shilling for his advice."

We cannot help but commend Mr. Pechey for his consideration for those who called him in only when he was in their neighborhood. Truly a wonderful condition of affairs.

While the notice of a regular was not common at this period, the quacks, as already shown, were liberal with their notices of one kind or another. One of these individuals, who obtained considerable notoriety in the early days, went by the name of Saffold, and he resorted to doggerel rhymes as a means of advertising. The following handbill is worthy of perusal:

"He knows some who are Knaves in Grain,
And have more Gall and Spleen than Brain,
Will ill reward his Skill and Pain."

"He hath practised Astrology above 15 years, and hath License to practise Physick, and he thanks God for it, hath great Experience and wonderful Success in both those arts, giving to doubtful People and by God's blessing, cureth the Sick of any Age or Sex or Distempter though given over by Others and never so bad (if curable); therefore let none dispair of a Cure but try him.

"Yet some conceited Fools will ask how he came to be able to do such great Cures, and to foretell such strange Things, and to know how to make rare and powerful Medicines, as his best Pills, Elixir, and Diet Drinks are, and wherefore he doth publish the same in Print? But he will answer such dark Animals thus:—

"It hath pleased God, the King of Heaven,
Being He to him hath Knowledge given,
And in him there can be no greater Sin,
Than to hide his Talent in a Napkin.
His Candle is Light and he will not under
A Bushel put it, let the World wonder:
Though he be traduced by such like Tools,
As have Knave's Hearts, Lackbrains are Fools."

"I request a favorable Construction upon this Public way of Practice (And as I am a Graduate Physician) should wholly omit to appear in Print, as well in this Disease as I have at all Times in all other Diseases, only in Opposition to the Ignorant, that pretend to Cure, and to prevent the ruine of them that suffer and I see daily throw themselves upon ignorant and outlandish Pretenders and others, to the Patient's utter ruine of Body and Purse. And upon this Consideration alone, I was persuaded rather to adventure the censure of some, than conceal that which may be of great use to many."

Truly a noble sentiment coursed through Saffold's veins; his modesty is certainly worthy of remark. He was succeeded in his philanthropic work by a certain Dr. John Case, who was equally notorious and resorted to similar methods to gain publicity. Upon his pill boxes was to be found the following couplet:

"Here's 14 Pills for 3 Pence,
Enough is every Man's own Con-sci-ence."

Lilly, another famous quack, had the distinction of having his portrait, such as it were, adorn the signs of the quacks and allied fakirs. For some unknown reason Balls were combined with Lilly's head. No less a celebrity than Thomas Saffold, already mentioned, advertised from the "Black Ball and Lily Head" that: "an approved and licensed physician and student in astrology; he hath practiced astronomy for 24 years, and hath had the Bishop of London's license to practice physick ever since the 4th day of September, 1674, and hath, he thanks God for it, great experience and wonderful success in those arts." He specifies in his advertisements that he is located "next door to the Feather shops that are within Blackfriars gateway which is over against Ludgate Church, just by Ludgate in London."

Digressing for a moment from the consideration of quacks, the liberty is taken of quoting a very curiously worded advertisement that made its appearance during the time of William and Mary (1689-1702), and runs as follows:

"Advertisement"

"The Physitians of the Colledge that us'd to consult twice a Week for the benefit of the Sick at the Consultation House, at the Carved Angel and Crown in King-street, near Guidhall, meet now four times a Week; therefore give Publick Notice, that on Mondays, Wednesdays, Thursdays and Fridays, from two in the afternoon till six, they may be advised by the known Poor, and meaner Families for nothing; that their Expectations and Demands from the middle Rank shall be moderate; but as for the Rich and Noble, Liberality is inseparable from their Quality and Breeding."

The necessity of a sliding scale of fees was recognized very early, if we are to put any confidence in the above notice.

From the same source we are supplied with another handbill of about the same period which is equally entertaining:

"A friendly and seasonable Advertisement concerning the Dog-days

by

Nath. Merry, Philo Chim.

"In regard that there are many that perish in and about this City, & C., through an evil custom arising from a false opinion That it is not safe to take Physick in the Extreams of Heat and Cold or in the Dog-days; and some exclude old People, Women with Child and little Children, from the use of Medicine; which is as much as to say, That God hath ordained no Medicine for such Times and such Ages, which would be absurd to imagine, seeing we know there is no Time, Age nor Disease exempt from proper homogenial and effectual Means (with God's Blessing) only against Death there is no Medicine, the Time of which to us is uncertain. From the aforesaid Mistakes many labour under the tyrrany of their Diseases, till the Catastrophe end in Death (before the Time come which they have allotted for their Cure) which might by timely and suitable Remedies be prevented. It's granted *pro confesso* that there is a sort of *Dogmatical Medicines*, that is unfit to be exhibited in those Times, and are not innocent at any Time, being impregnated with venomous Beams, which by their virulent Hostility invade the vital Oeconomy of the Body. But you may have Archeal or Vital medicines truly adapted for all times; being divested of their Crudities and heterogene Qualities, by a true Separation of the pure from the impure, and impregnated with Beams of Light, which give their Influences and refreshing Glances upon the vital Faculties, expels Venoms, alters Ferments, co-unites with Nature and re-unites its powers to their due Oeconomy, and such medicines being most natural and most powerful in the most deplorable Diseases being taken are most effectual and are no more to be omitted at any time than foods, and are altogether as safe."

The notice continues with an argument proving beyond doubt that Mr. Merry is the right person to consult during this dangerous period.

Just prior to the year 1700 another quack brought to the notice of the public his anxiety for their welfare in the following:

"A Caution to the Unwary."

"Tis generally acknowledged throughout all Europe, that no Nation has been so fortunate in producing such eminent Physicians, as this Kingdom of ours; and tis as obvious to every Eye that no Country was ever pestered with so many ignorant Quacks or Empirics. The Entusiast in Divinity having no sooner acted his Part, and had his Exit, but on the same Stage, from his Shop (or some worse Place) enters the Enthusiast in Physicks: Yesterday a Taylor, Heelmaker, Barber, Serving-Man, Rope Dancer, etc., to-day *per saltum* a learned Doctor, able to instruct Esculapius himself, for he never obliged Mankind yet with a *Panacea*, an universal Pill or Powder that could cure all Diseases, which now every Post can direct you to, though it proves only the Hangman's Remedy for all Diseases by Death. *Pudet haec opprobria dici;* for shame, my dear Countrymen, reassume your Reasons, and expose not your Bodies and Purses to the handling of such illiterate Fellows, who never had the education of a Grammar-School, much less of a University."

"Nor be ye so irrational as to imagine anything extraordinary (unless it be Ignorance) in a Pair of outlandish Whiskers, tho he's so impudent to tell you he has been Physician to 3 Emperours and 9 Kings when in his own Country he durst not give Physick to a Cobbler.

"Nor be gulled with another sort of Impositor, who allures you to him with *Cure without Money*, but when once he has got you in to his clutches, he handles you as unmercifully as he does unskillfully.

"Nor be ye imposed on by the Pretence of any *Herculean* Medicine that shall with four Doses at 5s. a Dose, cure the most inveterate Complaint and Distempters not to be eradicated (in the Opinion of the most learned in all Ages) with less than a Renovation of all the Humours in the whole Body.

"These and the like Abuses (too numerous here to be mentioned) have induced me to continue this public Way of Information, that you may be honestly dealt with, and perfectly cured, repairing to him, who with God's Blessings on his Studies and 20 years successful Practice in this City of London, hath attained to the easiest and speediest way of curing."

(To be continued.)

# SUDDEN OBSTRUCTION OF THE RETINAL CIRCULATION—THE REPORT OF TWO CASES, AND NOTES CONCERNING A PREVIOUSLY REPORTED CASE.*

D. Forest Harbridge, M. D.,

Philadelphia, Pa.

At the December, 1905, meeting of this Section the writer reported a case of monocular visible spasm of the central artery of the retina, and published the same in the July, 1906, number of *Ophthalmology*. It may be recalled that there occurred in the left eye complete cycles of vascular collapse and blindness, followed by refilling and return of vision. The collapse of the retinal vessels began with the inferior temporal artery, and vision was lost for about four minutes. These phenomena were repeated on numerous occasions, often as frequently as every forty or sixty minutes, and covered a period of time from November 26th to December 6th, 1905. The treatment advised was nitro-glycerine, bichloride of mercury, iodide of potassium in ascending doses, and avoidance of any unusual exertion. On December 7th, the day following the last attack, the patient was thoroughly purged with magnesium sulphate, upon the theory that the condition was possibly a vasomotor disturbance of a reflex character. This is the only remedy he has persisted in using with any degree of regularity, and still continues to do so at intervals when occasion requires it. The case was at that time observed by several of the writer's friends. The subsequent history of the case is as follows:

On December 8th, 1905, and January 30th, 1906, he complained of slight blurring of the sight, and upon examining the right fundus on this latter date, seven weeks after the last attack, it was noted that all the arteries appeared slightly smaller than normal, particularly the superior nasal branch, the veins being practically normal in size. While viewing the vessels it was observed that the superior arteries suddenly partially collapsed and immediately refilled. During this phenomenon the patient did not notice any appreciable difference in vision. Regarding this last observation, which it is to be noted was in the right eye, the *left* eye being the one upon which was based the former report, the following statement should be made:

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*Read before the Section on Ophthalmology of the College of Physicians of Philadelphia.

In the history of the original report inadvertent omission was made of the fact that upon several occasions, possibly three or four, the patient lost sight in both eyes, and upon one occasion particularly, while with him in Broad Street Station, it was necessary to stand still for at least two minutes before he was able to proceed, sight having been lost to both eyes.

At the time of the last examination, January 31st, 1910, the following notes were taken:

During the past four years the patient's health has greatly improved; weight increase, thirty-five pounds (he now weighs 190 pounds); he has not had at any time the silghtest haziness of vision; vertigo, of which he formerly complained, has entirely disappeared; the attacks of migraine have greatly diminished in severity and frequency, taking more the form of an ordinary headache, following usually some indiscretion in diet, the bowels becoming constipated. Sexual power has been absolutly lost since 1904.

*Ophthalmoscopic Examination.*—O. D., lens hazy, faint spicula down and in, disk gray and well defined except below, large central excavation. The arteries are pale and somewhat smaller than normal. The light streak and perivascular spaces fairly prominent, but not in any way marked. A small twig given off from one of the branches of the inferior temporal artery abruptly ends as a mere thread; the veins are slightly reduced, but even, and show no indentations. Two disk diameters above the nerve entrance, are two spots of hyaline degeneration.

O. S., small patch of granular opacities in the posterior cortex of the lens down and out from the center. The appearance of the nerve and vessels is the same as in O. D., excepting that the superior nasal vein is moderately full, uneven, and indented at the artery crossing. In the macular region there are three or four small whitish dots.

Fields in O. D. were perfectly normal; V. 6/5, part with correction. O. S. fields were practically normal for form, slightly contracted for red, especially above; the physiological blind spot was exaggerated, and an absolute scotoma of about 15 degrees in the center of the lower outer field corresponded to lenticular opacity. V. = 6/5, part with correction. Examinations by Drs. McCarthy and Stanton confirm their former reports.

*Summary.*—Frequent recurring spasm of the retinal circulation in both eyes, with absolute blindness during the attack, covering a period of eleven days, but observed ophthalmoscopically only in the left eye, with restoration and preservation of full vision up to the present time. A moderate amount of retinal arteriosclerosis in a patient with rheumatic and specific history, with partial loss of patellar and pharyngeal reflexes, partial loss of sexual power, and the subject of vertigo and migraine attacks, which latter, however, almost entirely disappeared.

CASE II. *Transient Monocular Hemianopic Blindness.*—C. L., male, age 63, merchant, first seen on October 5th, 1905.

*Family History.*—Father dead, due to accident, age 64. Mother dead, aged 88 years. Five brothers; two died in infancy; the other three died at the ages of 35, 50 and 60, death being due, respectively, to accident, erysipelas and some form of liver trouble; three sisters died in infancy.

*Personal History.*—Intermittent fever, 1884; chronic constipation, well nourished, never has done hard, laborious work, sedentary habits, never has dissipated in any way, always led a quièt, orderly life, no specific or rheumatic history elicted.

Patient has been myopic as long as he can remember, having received his first pair of correcting lenses about forty years ago, the last pair a few months since, ordered by an oculist. When a boy about ten years of age, was struck at the base of the nose by a stone, inflicting a skin wound. At intervals shortly following this, he was struck in the right and left temporal region by a stone. Shortly after the injury to the left temporal region sight began to fail in the corresponding eye until only light perception remained.

*Present History.*—During the past six months, patient states that the sight in the temporal field of the right eye has absolutely failed for intervals of a minute, always in a series of two or three attacks, one immediately succeeding the other, following at short intervals, and recurring at periods of two to four such short attacks during the week. Patient states that during one of these attacks, when looking at a box of shoes, he could see the nasal half, but the temporal half was absolutely lost.

*General Examination.*—This was made by Dr. J. L. Forward of Chester and revealed the following: Pulse 60 per minute. Hypertrophy of the heart, with valvular thickening and regurgitation; the muscle of the heart is very feeble, losing a beat four or five times during a minute at intervals of ten to fifteen seconds. Patient well nourished, phlegmatic, sedentary habits and habitually constipated. Urine specific gravity 1005, trace of albumin, no sugar.

*Eye Examination.*—O. D. V. 6/6 part with correction — S. 4.50 $\overset{\frown}{\smile}$ — cy .50x 180. Iris reacts promptly to light, senile arc above. Tension normal, fine vitreous opacities, disk horizontally oval, slightly reddish gray, small central excavation, well-defined connective tissue ring, in and out, but general outline of the disk apparently slightly hazy, probably due to the vitreous opacities and the myopia; arteries somewhat diminished in size, and a moderate degree of sclerosis; veins practically normal in size, excepting the superior nasal branch, which is rather full and moderately indented at artery crossing; temporal form field contracted ten to fifteen degrees.

O. S. V. Objects 3 inches, divergent, pupil 6 mm., iris reacts slightly to light, senile arc above, tension normal, lens cataractous, of a peculiar steel gray appearance, light perception good in all parts of the field.

The patient was admonished to remain quiet and avoid all undue exertion. The use of iodide of potassium, nitroglycerine, magnesium sulphate purge, and nitrite of amyl was resorted to. The magnesium sulphate and iodide of potassium he has used intermittently ever since. Regarding the nitrite of amyl, it should be stated that if the patient was able to use one of the pearls in time it always cut short the attack, and at times apparently prevented its occurrence. The patient kept accurate details of each series of attacks. There was always at least one day intervening between each series, and on several occasions as much as one week elapsed. The longest period was ten days, from January 6th to January 16th,

1906. The severity or duration was not affected by occupation, position, or condition of health, excepting upon one occasion, February 1st, 1906, while straining at stool, he had one single attack, which lasted longer and obscured a greater part of the field of vision. Upon several occasions he noted a moderate dull pain in the fellow eye during an attack. Frequent examination of the fundus failed at any time to disclose collapse of the vessels, obstruction, movement of the blood current, or interruption of any kind in the circulation. The attacks continued with more or less frequency until June 7th, 1906 (in all about fourteen months), at which time, his general health being somewhat impaired (mild influenza), he rested at the seashore. From the above date up to the time of his last examination, February 1st, 1910 (four years), he has not had a recurrence or in any way the slightest interference with vision. The eye examination reveals practically the same condition as originally noted, the superior nasal vein remaining full and even, save moderately indented at the artery crossing; the fine vitreous opacities perhaps have increased, with the addition of a few larger ones. The field is normal V. — 6/6 part, with correction. Urine normal, save a very few hyaline casts. Dr. Stanton reports the vascular condition as follows: Pulse 68, low blood pressure 80, high blood pressure 140, systolic murmur best heard at the apex. A moderate degree of arteriosclerosis.

*Summary.*—Obscuration of half the field of vision recurring at frequent intervals during a period of some fourteen months, followed subsequently up to the present by freedom from these attacks, in a patient with a moderate degree of arteriosclerosis, the subject of weakened heart muscle and valvular regurgitation.

CASE III. *Rapid Loss of Sight, Due to Obstruction of the Retinal Circulation.*—Mrs. H., age 31; first seen on April 11th, 1908.

*Family History.*—Father died in middle life of typhoid fever, complicated with pneumonia; mother living and well; two brothers and four sisters, all in good health.

*Personal History.*—Mother of two living and healthy children. Patient in modest circumstances. Does little housework, but considerable sewing. Menstrual period developed at 13 years of age, has always been irregular, scant and frequently accompanied with pain; upon last occasion, April 1st, unusually distressed, headache, nausea, severe pain and scanty discharge. In November, 1907, suffered an unusually severe attack of influenza, accompanied with symptoms indicating possible frontal sinus involvement.

*Present History.*—About five years ago, following an unusual exertion of running five or six blocks in search of a lost child, for whose safety she displayed great anxiety, noticed a mist before the sight, which was followed by a headache. Since that time any unusual exertion has produced attacks of misty vision, always followed by a headache lasting about half an hour. During the morning of the day preceding the patient's visit to me she had hurried about the house, sweeping and cleaning, and at about 11:30 a. m., following a sharp pain in and about the left eye and orbit, the sight of this eye began to grow misty, gradually increasing until sight was absolutely lost about 4:30 p. m.

*Physical Examination.*—The nervous system Dr. McCarthy reports to be negative. The examination of the vascular system by Dr. Stanton proved negative. Dr. F. Evans of Chester, to whom I am indebted for the case, states that there is a trace of albumin present in the urine.

*Eye Examination.*—O. D. V. 6/6. Iris responded actively to light, fundus normal, veins and arteries normal in appearance. O. S. blind, slight ptosis, pupils dilated two-thirds, media clear, disk quite pale and outlines very hazy, retina edematous, large bright cherry red spot in the macular region, arteries markedly attenuated, almost threadlike, veins greatly diminished, but both sets of vessels contained blood. Upon watching the vessels for a few moments, it was noticed that the veins near their entrance into the substance of the nerve gradually filled up, the blood column passing in a reverse broken current toward the periphery, beginning in the superior vein, following in the inferior. While watching this movement toward the periphery, it was noted that the same condition took place in the arteries. This persisted possibly for two minutes, when finally all vessels became filled to about normal size, the veins perhaps a little larger with solid columns of blood and no perceptible movement apparent, then very slowly the vessels gradually grew less in size until they regained the calibre originally observed—mere threads. This phenomenon consumed several minutes. These cycles of vascular changes were observed three times at the first examination. The patient was admitted to the Chester Hospital, placed in bed and given pilocarpin sweats, iodide of potassium, mercurial inunctions, nitroglycerine, nitrite of amyl, magnesium sulphate purge and deep ocular massage for ten or fifteen minutes every hour. Following the use of the nitrite of amyl or massage the vessels would practically regain normal size, but vision, or even light perception, never returned. On April 18th, after one week's treatment with no apparent benefit, the patient, becoming disheartened, was discharged from the hospital upon her own request. All vessels were greatly attenuated, as at first noted. During the following four weeks frequent observations were made, the vessels displaying a variety of circulatory phenomena.

April 20th the vessels were attenuated, and for the first time there was noted two small curvilinear hemorrhages just below a line from the disk to the macular region, rather nearer the latter.

April 27th, vessels practically normal in size, cherry spot of a darker hue. May 1st, the arteries mere threads, veins lessened in caliber, the superior and inferior temporal veins within the ophthalmoscopic field were entirely free of blood, save at two or three points; outlines well defined, the remaining portions of the vessels appeared as white channels, nearly the diameter of a normal vessel. After watching this for about ten minutes, the empty portions and the small collections of blood passed in a reverse direction, followed by a column of blood. The balance of the retinal vessels regaining practically normal size. May 11th, a complete cycle was observed, requiring about ten minutes. Beginning with the vessels about normal in size, the blood current in the superior arteries parted just after emerging from the disk, gradually passing out toward the periphery, leaving the unfilled vessel behind it. The same condition continued into the superior veins from the periphery toward the disk, and also in all the other vessels, the movement being in the normal direction and taking about three minutes, the vessels remaining normal in width as well-defined white hollow tubes, save for the small collections of blood scattered along at different intervals. After remaining in this fairly empty state for about four minutes a column of blood appeared, which gradually went out toward the periphery, completely filling all vessels, and requiring about three minutes to do so.

May 18th, all vessels greatly lessened in caliber, no break in the column and no movement made out, disk quite atrophic, outlines somewhat hazy, but well defined, retina hazy, cherry spot brownish color. The patient, having become thoroughly disheartened, never returned for further observation, and on February 3rd, 1909, ten months after the permanent loss of sight, and six or seven years after the first premonitory symptoms of misty vision, died of uremia.

*Summary.*—Rapidly increasing loss of sight with permanent blindness ensuing, with the premonitory symptoms of misty vision, in a patient with apparently no evidence of arteriosclerosis, but with unusual varied changes in the retinal blood current, due to some form of obstruction, patient dying with symptoms pointing strongly toward uremia.

*Conclusions.*— The phenomena observed* in the above cases, the writer believes, may be accounted for by assuming that primarily they are dependent upon some one of the various types of arteriosclerosis. Case I may be accounted for by assuming that it belongs to that type of arteriosclerosis due to syphilis in which there is present a granulomatous inflammatory degeneration affecting the muscle tissue of the media, the elastic fiber escaping and producing a small succulent, semi-transparent or hyaline-appearing elevation, which, by virtue of the weakened media, is replaced by a strain hypertrophy of the intima and adventitia, resulting in nodosity of the intima. Thus any moderate reflex vasomotor disturbance inducing a slight vessel wall contraction, causing an intrusion of the nodosity into the lumen of the vessel, might result in a more or less temporary or permanent blocking of the blood current, perhaps more particularly in the smaller branches. In this case the reflex may have been due to some intestinal disturbance. In Case II the mechanism is quite similar to Case I, excepting that we assume the sclerosis to be of the true senile type, for, according to Klotz, there is a physiological atrophy of the media after fifty, which, even with normal blood pressure, there may be intimal thickening—a strain nodosity—showing as a yellowish white thickening (which may or may not receive a calcareous deposit), this condition showing a predilection for the origin of small branch arteries, such, for example, as the intercostal branches, coronaries, etc. With this condition present in certain of the branch retinal vessels, and a temporarily lowered blood pressure, such as our patient quite likely had, we can easily appreciate a temporary blockage of the blood current. Case III, with a history such as has been recorded in a comparatively young person, I think we can safely account for the phenomena by assuming that it belongs to that type of sclerosis in which there is a fibrosis of the intima, a cellular proliferation of the intimal endothelium, leading to an obliterative endarteritis, the primary cause being some form of infection.

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*The early phenomena in cases one and three were observed also by Drs. Zentmayer, de Schweinitz, Posey, Dewey and Holloway.

It is obviously unnecessary to refer to the literature on this subject, it having been so recently and thoroughly reviewed in connection with the report of cases by Zentmayer, de Schweinitz and Holloway, Posey, Reber and others.

# ATROPHY OF THE IRIS OF AN UNUSUAL FORM.*

HAROLD G. GOLDBERG, M. D.,

PHILADELPHIA.

The most interesting feature of this case was the curious condition of the iris and the changes that were taking place in that structure. The history, for whatever interest it may have, is briefly as follows: On December 14th, 1907, while employed in the shops of the Baldwin Locomotive Works, the patient was struck in the face by a flying belt, caused by the breaking of the lacing. His lips and face were severely cut and bruised, and upon his recovering consciousness, which had been lost only momentarily, he found that he was unable to see with either eye. He was removed in an ambulance to the Crozier Hospital, where he remained about seventeen days. Light perception gradually returned to the right eye, when at the end of a week an attack of erysipelas of the face produced so much swelling in these tissues that once more he was unable to see with either eye. Vision gradually returned, however, to both eyes, the right more rapidly, so that at the time of his discharge from the hospital he was able to distinguish objects. His vision improved so slowly that on February 11th, 1908, he applied for treatment at the Wills Hospital, and was assigned to the clinic of Dr. William Zentmayer. His vision at that time equaled: R. E. 5/30, L. E. 2/50. Through the courtesy of Dr. Zentmayer the writer was able to learn the following—an abstract from his record books: R. E. anterior chamber deep, pupil eccentric oval, long axis 45°, sluggish to light, dilated 4 mm., tension slightly plus. L. E. anterior chamber shallow, pupil oval, long axis 15°, reaction prompt to light. An ophthalmoscopic examination revealed: R. E. cornea clear, several localized granular lenticular opacities, vitreous clear, disk large, irregular in shape, central excavation to the lamina at the nasal side; the outer half of the nerve has a shallow excavation. Just beneath the macula is a curvilinear lesion, almost horizontal, yellowish in color, with pigmented borders, concavity upwards. At the nasal end of this lesion there is seen some retino-chorioidal disturbance, marked by overlying pigment. In the left eye the cornea was clear, the iris was attached to the lens by several small points at the lower nasal half of the pupil; the vitreous was clear, the disk irregular in shape, red grey in color, with an excavation to the lamina, and a well-marked scleral ring to the temporal side. On the temporal side of the disk was seen a small pigmented area, the result of a hemorrhage. The patient was referred to the writer by Dr. Johnston, of Moore, Pa., February 13th, 1908. At this time his vision equalled: R. E. 6/35, L. E. 3/100. In addition to the changes noted by Dr. Zentmayer, the following should be described: In the right eye the axis of the pupil had changed to 20°, in the left eye the pupil was dilated ad maximum, it was immobile to light and was markedly degenerated in appearance. In this eye there was also a well-pronounced neuroretinitis, and a localized retinal detachment on the temporal side, just posterior to the ciliary body, in the horizontal plane. The treatment consisted in the local application of atropin sulphate and dionin 10% solution, rest, etc., and a pill internally of bichloride of mercury and extract of belladonna. His vision remained the same until May 2nd, when a posterior sclerotomy was performed over the external point of detachment, and the fluid allowed to escape. On May 19th the vision in the right eye was 6/60 and in the left eye has improved to 6/35; in this state it has remained until the present time. His condition to-day is as follows: In the right eye the cornea is clear, the anterior chamber of normal depth, the pupil is irregularly oval, long axis 20°, and there are several small points of deep black pigmentation in the lower nasal quadrant. In the left eye the cornea is clear, the anterior chamber very shallow, the pupil irregularly oval, long axis 150°; there are two large areas of absorption in the iris in a plane of 160°; here the stroma has undergone an atrophic change, actually exposing the underlying retinal pigment. Below this area, as in the right eye, are to be seen a number of small pigmented points, which appear, even when magnified, as though they had been laid upon the surface, instead of being a part of the retinal pigment layer exposed by atrophy. They might be described as proliferations from the retinal pigment cells, which are reaching up through the fibers of the stroma to bud upon the surface; the atrophic changes already described being a later stage, a true degeneration, in which the proliferated cells also suffer. The two eyes represent different steps in this process, the left eye being much more advanced, and showing both changes taking place at the same time. Both irides are fairly prompt to light; in the right eye the media are clear and the fundus is in a reasonably healthy condition, nor is there anything unusual about it except a patch of pigmentation on the temporal side and somewhat below the disk; there may also be some little atrophy of the nerve. In the left eye the media are clear, there is present a low grade neuroretinitis, the tension is rapidly growing less, and the eyeball is flattening in the vertical meridian. The curious feature of the condition is that the iris in the left eye was not at any time, while under the observation of the writer, affected by an inflammation of an exudative type, which condition almost always precedes the profound atrophies; this is further evidenced by the fact that the iris does not present the usual deformed appearance caused by the contraction of the fibrous membranes formed on the surface during inflammations, unless the proliferated pigment may be a specimen of such an inflammation. There is no ectropion, rather the pigment is proliferated or clumped than pulled upon, as is usually the case. It will be observed that the muscle fibers have survived the degeneration, the reaction of the irides is prompt, and what distortion is present is due, apparently, to a loss of tension instead of the usual causes. It seems that the explanation for these appearances are the changes which are taking place in the chorioid, extending throughout the entire uvea. This would account for the independent character of the iris lesions, which have not been preceded by the usual causes. The case will probably retrogress to complete degeneration and ultimate blindness.

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*Presented at the Section on Ophthalmology, College of Physicians, Philadelphia, April 15th, 1909.

*1005 Chestnut Street.*

# A MODIFICATION OF THE SCISSORS OPERATION FOR SLITTING THE LOWER CANALICULUS.*

J. W. Charles, M. D.,

St. Louis.

In the treatment of stillicidium associated with that swelling caused by acute or chronic conjunctivitis, which presents a tendency to ectropion, many practitioners do not seem to recognize the great importance to the patient of giving immediate relief from the discomfort caused by the constant welling up and overflow of the tears, nor the injurious effect of the hot tears upon the skin, which contracts it and thereby causes an eversion of the lid, which hinders the recovery of the conjunctivitis, thus operating in an increasingly vicious circle.

The old method of opening the canaliculus with a knife in these cases of swelling was only in rare cases satisfactory *from the beginning of treatment*. As a rule, the slit-like outlet for the tears could not possibly be as patent as desired because its line was parallel with the course of the tears. In addition, the pumping power of the canaliculus was practically destroyed, and in many cases, when the swelling of the conjunctiva had subsided, the inner lip of the incision was found not to be in contact with the globe. The punctum and canaliculus were subsequently deformed, and the surgical maxim to leave a part as nearly normal as possible was certainly violated. This result did not seem to be confined to the work of the unskilful, but was often observed in the practice of our leading ophthalmic surgeons.

About thirty years ago, Dr. John Green, wishing to avoid the external deformity arising from the knife operation and also the possibility of the lack of contact of the new punctum with the globe, with its liability to catch dirt, devised a scissors operation, which I first learned from Dr. Post in 1891.

He inserted the probe-point of a punctum-scissors into the canaliculus, turned them so that the upper blade would describe an arc, until it rested upon the conjunctival surface and lay temporarily from the blade which was in the canaliculus, as in Figure 1. He then cut so that a flap was left, which was raised daily with a probe until the denuded surfaces were covered with epithelium and the resulting vertical punctum was fairly patulous. The triangular flap (Figure 2) acted as a valve in favorable cases until it shrank, and the method was in every respect an improvement over the old.

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*Read before the Ophthalmic Section of the St. Louis Medical Society, April 6, 1910.

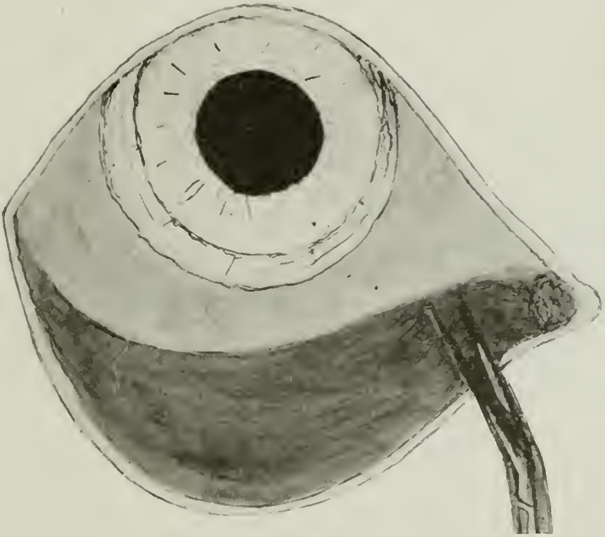

FIGURE I.

Scissors operation for slitting the lower canaliculus (Dr. Charles).

However, it seemed to me that in this method the swollen flap often prevented as immediate a result as was to be desired, and that the punctum was not quite restored to its normal shape when all irritation of the conjunctiva had subsided. There was left a small vertical slit, the lips of which were more or less raised, according to the condition of the conjunctiva, and the consequence was that a certain small number of cases was not permanently benefited by the operation.

The ideal operation for a closed punctum should be one that first of all immediately removes any barrier to the flow of tears into their proper channel, i. e., produces such a punctum as would present an artificial lacus lacrimalis around the punctum, which will be turned toward or indeed rest upon the globe, and from which a canaliculus, as nearly as possible normal, pumps the tears.

This lacus lacrimalis is obtained by removing the hypertrophied conjunctiva down as close to the tarsus as possible on the temporal side of the punctum. This is accomplished by pressing the lid upward with the finger, so that the flattened blades of the scissors make a fairly deep bite. This method yields a triangular flap, instead of a simple vertical incision. This flap is then snipped off (Figure 3) either by a vertical cut or by an incision somewhat similar to the first one, leaving a depression, at the bottom of which may be seen the beginning of the canaliculus. As the swelling subsides, this depression assumes the form of the normal punctum (although of greater than normal caliber, with normal pumping power, which latter is made possible by capillary attraction and by the motion of the lids.

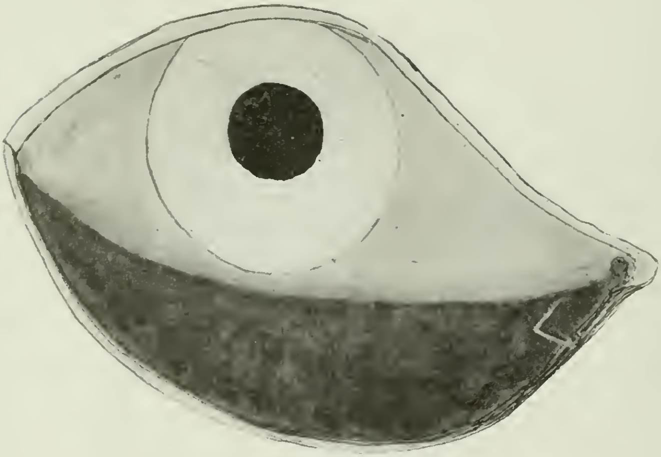

FIGURE II.

Scissors operation for slitting the lower canaliculus (Dr. Charles).

In the event of hypertrophy of the conjunctiva sufficient to cause ectropion, the lid is strapped up at its outer edge in order to temporarily relieve the ectropion as much as possible. It is sometimes surprising how rapidly the condition improves after this procedure. Of course, the new punctum must be kept open by daily insertion of a probe until entirely covered with epithelium.

Depending upon the amount of ectropion, the vertical incision through the conjunctiva may extend backward almost as far as the cul-de-sac.

This method differs widely from that of Critchett, who, in the early fifties, slit the canaliculus almost its entire length with the knife and then cut out a large triangular flap of the conjunctiva, thus leaving a large defect, which filled with granulation tissue, which interfered with the passage of tears and later contracted into a deformity of the inner portion of the lid, often of the caruncle.

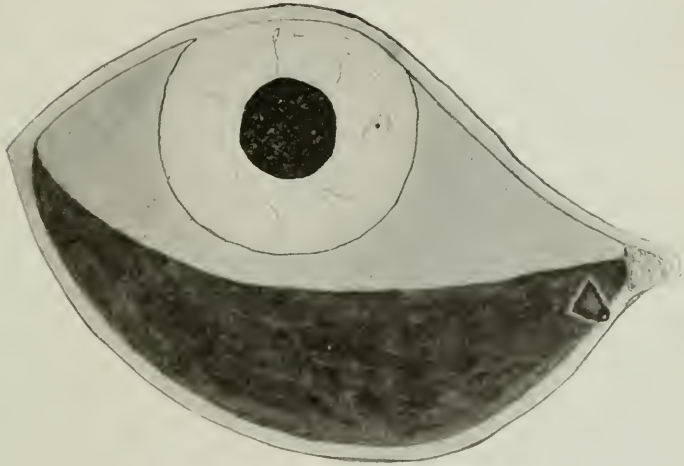

FIGURE III.

Scissors operation for slitting the lower canaliculus (Dr. Charles).

The operation is in no way intended to take the place of the more radical operations for ectropion, because there are naturally cases which would never respond to such a mild procedure, but it has been very satisfactory in relieving the stillicidium caused by closure of the punctum and beginning ectropion.

# CONGENITAL DEFECT OF ABDUCTION ASSOCIATED WITH RETRACTION OF THE EYEBALL—REPORT OF A CASE.

Samuel Horton Brown, M. D.,

Philadelphia.

Under the title of "Congenital Defect of Abduction Associated With Retraction of the Eyeball," Dr. John T. Carpenter of Philadelphia reported in the *University of Pennsylvania Medical Bulletin,* March, 1905, a case of this unusual condition, and incorporated in his report the bibliography of the affection to that date. The clinical features of the condition are so constant that he and other observers have considered them as a distinctive ocular syndrome.

Briefly these features are, first, the existence from birth. The condition is undoubtedly congenital, but the ophthalmic surgeon may not be consulted until long after, depending upon how keen the mother's perception may be. By a strange coincidence, more females are affected than males, and the condition is usually unilateral, the left eye being involved in most cases. The vision in nearly all cases is normal or can be made so by proper correction. In most cases the ocular axes are parallel in the primary position. The palpebral fissure is narrow and the eye appears sunken, especially on turning to the unaffected side. Attempts at movement toward the unaffected side are attended by widening of the palpebral fissure and protrusion of the eye. In the primary position, binocular single vision is the rule. Diplopia and its attendant annoying symptoms are present when it is required to look toward the affected side, and to avoid this the patient learns to tilt the head to compensate.

The case which it was my privilege to observe occurred in the person of a young girl, eleven years of age when she first consulted me. The mother informed me that the deficiency of motion in the left eye was noticed within a few days after birth and had remained constant ever since. The cosmetic effect of the disorder led the mother to consult several physicians before consulting me, but at no time was there any complaint of symptoms directly referable to the eyes. On the advice of one of these physicians, eye exercises were indulged in, but they produced very disagreeable symptoms and effected no change in the muscle condition.

The history of the case shows that the labor that brought forth the patient was a most difficult one. The child never had scarlet fever, influenza, or diphtheria, but has had chicken-pox, measles and whooping cough, and that vague condition to which we ascribe the term rheumatism for three or four years. She did not have articular rheumatism at any time. She has had a weak, nervous, irritable heart for a period of five years, and has received considerable medical attention for this affection. The child is of a nervous temperament, becomes easily frightened and more or less choreic upon the slightest provocation. Being always on a high tension, she absorbs impressions of all kinds quickly, and is consequently bright in school.

Upon consulting me, there was evident paralysis of the left external rectus, with slight inclination of the head to the right side. Turning of the eyes to the right resulted in retraction of the eye, and marked narrowing of the palpebral fissure; attempts at turning of the eyes to the left resulted in halting of the eye at the middle of the fissure, which became wider, and slight rotation upward of the globe. The unaffected eye, which was now in adduction, was not attended by any shrinking of the globe or narrowing of the fissure.

The condition of the pupils, media, and fundus was normal in every respect. Examination of the eyes under atropin cycloplegia showed the refraction as follows:

O. D. 5/15 + S 1.00 + C 0.25, axis 75° = 5/5
O. S. 5/9 + S 0.75 + C 0.25, axis 90° = 5/5

Regarding the muscles, there was no convergence or divergence in the primary position. The muscles were able to overcome 6 degrees of prism placed base out; 4 degrees, base in; 2 degrees, base down; 2 degrees, base up. The maddox rod showed esophoria of 5 degrees. There was no hyperphoria. Under atropin, it was possible with the right eye covered to coax the left eye a trifle to the left of the median line, but such movement was accompanied by upward rotation. Full correction was ordered, and a simple exercise consisting of covering the right eye and coaxing the left eye to the left by moving the fingers held a short distance away to either side was prescribed. The patient being a child, the possibility of compensation by fibers not fully atrophied was entertained. The iodides had been freely used by other physicians without any benefit whatever.

*1001 Mt. Vernon Street.*

# A MODIFICATION OF THE RED-GREEN GLASS SLIDES OF THE OPHTHALMOMETER.

PERCY FRIDENBERG, M. D.,

NEW YORK.

One of the most recent improvements in the mechanism of the keratometer which we still familiarly call the "Javal," has been the substitution of slides of red and of green glass, respectively, for the milk-glass plates formerly used to transilluminate the mires. In the older models the clear white image, while beautifully distinct, was actually too bright, so that there was some inaccuracy in determining the exact approximation of the mires on account of the irradiation at the point of contact and, possibly, on account of dazzling of the observer's eyes. The red and green glass, in color complement, was suggested, to do away with this irradiation of white light and allow exact approximation of the mires. This it undoubtedly does, and the red-green slides are in wide use. They are, however, open to the very serious objection of cutting down the illumination, and as too little light is worse than too much, many oculists have discarded the red-green slides and use only the white mires. As the cutting off of irradiation is a factor of undoubted value, it has occurred to me that its good points might be preserved without sacrificing the volume of light, by a simple modification of the present colored slides. This consists in making them just one-half the present size, so that instead of covering the entire mire, one-half of the latter will be uncovered and appear bright white as in the older model of the ophthalmometer. We shall then have, side by side, the colored and the uncolored picture of the two mires, and may use the bright milk-white slide for a preliminary approximation, or coarse adjustment, as it were, and then get our fine adjustment and final accurate approximation by means of the red-green slide. In many cases we may consider one slide only by preference, but we shall always have the other as a control if needed. Again, we may find that for most cases the red-green slide gives sufficient light, but when a case does appear in which we need more brilliant illumination, this can be obtained without changing any of the parts of the instrument. The slight modification suggested by me has been taken up by Mr. E. B. Meyrowitz with the alacrity and interest with which he greets any improvement.

The mechanical history of the Javal-Schiötz ophthalmometer in this country has been one of successive improvements and of additions, notably those of Skeel and Valk, to every part of the instrument, making it more and more an invaluable clinical aid instead of, as at first, a rather clumsy and impracticable laboratory instrument. The graduated adjustment of the mires, the vertical raising and lowering, the adjustable chin-rest, the removal of the cumbrous and unnecessary dial, the pilot-light for illuminating the axis indicator, the arrow dial for primary and secondary positions, the rack motion for focusing, are but a few of a score of mechanical details which have made the ophthalmometer practically a new instrument. Considering the important role played by this instrument in the rapid and accurate estimation of refraction errors and the value of the practical improvements cited above in bringing it into more and more general, accurate and skilful use, I need hardly apologize for having put in print my own little contribution to this end.

*60 East 58th Street.*

# ABSTRACTS FROM ENGLISH OPHTHALMIC LITERATURE.

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### On So-Called Doubling of the Puncta Lacrymalia.

TOOKE, FREDERICK T., Montreal, Can. (*Ophthalmology*, April, 1910), reports the following cases: Case I.—R. R., a young man of 25, was asthenopic and was refracted and corrected. Epiphora persisting in the left eye, the lacrymal channels were explored. While employing a Meyer's syringe a tiny stream of water was emitted from a point about three mm. internal to the punctum. This orifice was on the lid margin in the same line with the punctum, the two connecting through the same canaliculus, the second opening being a narrow slit on the level with the lid margin. There was no doubling of the upper canaliculus nor of the canaliculus in the lids of the other eye. Case II. B. F., aged 45, presented much the same condition as the preceding case, except that the secondary opening was external to the punctum. As before, there was no doubling elsewhere. No explanation is given in authoritative works of this condition. There is reference to the fact that occasionally the absence of the canaliculi may be replaced by a groove in the lid margin. This groove is probably a remnant of the lacrymo-nasal groove, which appears about the sixth week of fœtal life. The thickening of its under side and development constitutes what we later understand as the nasal duct. Should involution be incomplete at any point except the natural termination of the lumen constituting the punctum, this accessory opening, in the writer's opinion, must be accepted as a congenital fistula, or what might be called a fœtal cleft. The puncta consist of circular as well as longitudinal fibers, and until it is demonstrated that these supplementary openings are surrounded by both circular and longitudinal fibers it is proper to consider them, not as puncta, but rather as clefts, due to a nondevelopment of the foetal lacrymo-nasal groove. A. F. A.

### Two Cases of Pneumocele of the Lacrymal Sac.

Elliot, R. H., Madras, India (*Ophthalmology*, April, 1910), reports two cases which applied to the Government Ophthalmic Hospital at Madras for the removal of cataracts within a period of one month, and in which there was found obstruction of the canaliculi, more or less complete. When the nose was closed the sac could be inflated, and in one case a musical note was produced when the dilated sac was forcibly compressed. A. F. A.

### Paresis of the Third Nerve of Both Eyes.

Schneideman, Theodore B., Philadelphia, Pa. (*Ophthalmology*, April, 1910). R. R., female, aged 17 years; father died of consumption; fifth of eight children, all living except one, who died a violent death; was pale, weak, had lost flesh and was evidently cachetic. Within two months she had lost much of the power of the external muscles of both eyes innervated by the third nerve, though there was no complete paralysis of any, while the internal musculature was intact and the abducens and superior oblique were evidently unaffected. Four months later she died, after an illness of two weeks, of some brain disorder, part of the time unconscious and unable to speak, owing to inability to move the tongue. There were no other palsies of other muscles apparent and the ocular conditions remained unchanged until death. What was the pathological nature of the lesion and where was its seat? The fatal illness was evidently a cerebral affection and must have been connected with the preceding ocular palsies. A central origin of the paresis seems to be the only one admissible. The absence of involvement of other nerves, the limitation to the external muscles, and the occurrence on both sides, strongly point to a nuclear lesion. The absence of all indications of syphilis and the utter failure to respond to specific treatment would justify its exclusion as a cause. Tubercle may be a cause of ocular palsy, and this was probably the cause of the one under consideration and was the real nature of her fatal illness. Gowers describes a condition in which there seems to be no palsy, but a general weakening of several of the ocular and other muscles of the face, with possibly a weakening of the accommodation. This may have been an example of that malady, the etiology of which is very obscure.

A. F. A.

### Ophthalmoplegia Totalis (Hysterical) Cured by Psychotherapy.

Bennett, Arthur G., Buffalo, N. Y. (*Ophthalmic Record*, January, 1910), tells of a boy, aged seven years, who, notwithstanding his excessive fear of the ordeal, was vaccinated on May 27, 1909. On June 5 he complained of diplopia, and was examined by the writer on June 10. Both pupils were dilated ad maximum; there was total paralysis of every muscle controlled by the third and sixth nerves of both eyes, with the exception of the levator palpebrae, which was under control. The accommodation was totally paralyzed and the eyes immovable. The vision in each eye was 6/12. The vaccination had been unsuccessful, and the abrasion had healed. A prescription consisting of syr. hydriodic acid and tinc. of nux vomica was given and continued for three weeks, the dosage being increased to tolerance, but without results. All medication was then discontinued; the mother was instructed to talk to the boy after he had fallen asleep and tell him that his eyes would surely be better in the morning; also to speak encouragingly to him during the day; to continue this for five days, and then to bring him back for examination. The results exceeded the expectations; the paralysis had entirely disappeared, the pupils responded to light, the muscles had recovered their full function, the accommodation was normal, and the vision 6/6. The diminution in vision was due to a hyperopia of + 0.50. There has been no relapse.

O. W.

### A Study of Heterophoria and Heterotropia.

Lauder, Edward, Cleveland, Ohio (*Ophthalmology*, January, 1910), says that the dynamic condition of the recti muscles, estimated by version, as determined by the tropometer, does not always correspond with the dynamic condition estimated by duction as determined by prisms. Duction can only be used in cases of binocular vision. Version is of almost general use in determining all movements of the eye. The tropometer is of the greatest value in estimating the conduct of each muscle, and especially in determining the choice of operation for the relief of insufficiency and squint. A series of cases is given, illustrating the value of the tropometer in all cases of muscular imbalance.

A. F. A.

### Injury to the Eye from the Presence of Anilin Pencil in the Conjunctival Cul-de-sac.

Snell, Albert C., Rochester, N. Y. (*Ophthalmology*, January, 1910), reports a case in which a particle of an indelible pencil had been in the cul-de-sac for one hour. There was marked swelling of the lids, spasm of the orbicularis, photophobia, profuse purple lacrymation, œdema of the tarsal and bulbar conjunctiva, which was deeply stained purple, and a steamy cornea. The pain was severe, and the vision was reduced to fingers at ten feet. The pencil point was found imbedded in the conjunctiva and was removed. The edges of the wound were ragged, stained, and involved both the tarsal and bulbar conjunctiva. The aqueous was stained and the lower segment looked like a purple hyphæma. The eye was flushed with water and for three days was very painful and inflamed. Then the color began to disappear, and on the ninth day no trace of it could be seen in the anterior chamber or conjunctiva. By the end of the second week all signs and symptoms had disappeared and the vision was 20/20. The severity of the inflammation was due to the chemical nature and solubility of the anilin, the action of which can be neutralized by the application of a five or ten per cent solution of tannic acid. Other solutions, than water, are likely to irritate the eye and do harm. A. F. A.

### Report of a Case of Ophthalmia Nodosa.

Marlow, F. W., Syracuse, N. Y. (*Archives of Ophthalmology,* March, 1910), reports a case in which there was a clear history of a white caterpillar having been thrown into the patient's eye, with the development of nodules four months later. These nodules were firmly adherent to the sclera and were arranged mainly in two groups. There was no sign of inflammation except a very slight redness in their immediate neighborhood. The nodules were excised and their bases touched with the electro-cautery. The recovery was good, without sequelæ of any kind. H. G. G.

### The Surgical Treatment of Trachoma by Means of the Combined Excision of Heisrath and the Tarsal Resection of Kuhnt.

Wootton, Herbert Wright, New York City (*Archives of Ophthalmology,* March 1910), describes in detail the various steps of these operations, and goes on to say: In judging of the value of these procedures we must keep clearly in mind the indications for their employment and the objects which they have in view. They are contra-indicated in the follicular trachoma of children, in which form of the disease expression finds its most satisfactory application. They are especially indicated in the severe cases of adults, which are found almost exclusively in hospital practice, and which constitute the bane of most eye clinics. Neither operation has for its object the cure of the patient, with the restoration of normal conditions. The combined excision is, in fact, a surrender. It recognizes the practical impossibility, in clinical practice, of curing these cases by any measures which seek to preserve the normal state of the tissues, and simply aims to anticipate by years the natural cure of the disease, with the avoidance of the untold suffering and damaged vision resulting from corneal complications. A severe case of trachoma which has fully run its course presents a conjunctiva devoid of follicles, a shallow fornix, and an atrophied cartilage. The cure is complete, and the patient has probably been rendered proof against reinfection, but, unfortunately in most cases, his visual acuity has suffered so severely that he is now unfit for any labor but the coarsest and, through the periodic interruption of his occupation during a number of years, he has suffered immeasurable economic loss. A properly performed excision places him in the position which he could otherwise have attained only after years of suffering and disability, forestalls the occurrence of corneal complications, and makes the patient again a useful member of society, who, if circumstances so compel him, may remain in his trachomatous environment without danger to himself or others. The resection of the tarsus finds its most useful application in the cicatricial stage, when the trachomatous process has run its course, and the patient's sufferings are apparently due to the presence of the distorted cartilage. The operation is founded on firm surgical principles, and simply removes a tissue, the function of which has become perverted and which still remains a source of detriment and danger to the patient. The good results are immediate, and are said to be permanent. The gratitude of the patients, relieved almost at once of their pain and disability, is extremely gratifying. The writer's experience embraces thirty-seven cases operated upon during the past spring and summer. They were all severe cases, many of them complicated by keratitis, and the results have been so generally satisfactory that he feels that he can confidently recommend the procedures to other surgeons for a more extended trial. H. G. G.

### Visual Hallucinations in a Patient with Senile Cataract.

Gonzales, Jose de Jesus, Leon, Mexico (*Ophthalmology*, April, 1910). In the Congress of the Ophthalmological Society in Heidelberg in 1898 several forms of hallucination accompanying visual disturbances were discussed. Later, at Paris, in 1908, several other cases were presented for discussion. Such cases, then, are not rare, but only one, besides the one now under discussion, appears to have been associated with cataract. Miss M. G., 50 years old, of normal antecedents, developed in nine months a complete cataract in each eye, with perception of light only. Then she had hallucinations of the greatest variety. Some were seen in darkness and some in both natural and artificial light. They took the form of intricate geometrical and lace patterns, animals, normal and grotesque figures, some at rest and some animated. Long streets and tall buildings, valleys and mountains and illuminated clouds appeared before her. All were reproductions or caricatures of what she had seen. Things that she had never seen were never reproduced, an automobile, for example. She was always cognizant that these phenomena were hallucinations, and they were never confused with hallucinations of the ear or nose. The right eye was operated on successfully, and the hallucinations ceased, unless the eye was covered or the sight blurred by the presence of drops. Two weeks later the other eye was operated on, and the hallucinations ceased, even when both eyes were bandaged. These phenomena were undoubtedly of peripheral origin, not only because they ceased as soon as the vision was restored, but because they would appear after the first operation whenever the clearness of vision was temporarily obscured. The cause of the hallucinations was probably the misinterpretation of the faint lines and streaks of light which found their way through the translucent lenses, intensified by the imagination and by the association of ideas and reminiscences of scenes familiar to her mind before the loss of vision. A. F. A.

### On the Extraction of Cataract Within the Capsule.

Elschnig, A., Prague (*Ophthalmology*, April, 1910). Expression of the lens in the capsule dates to 1773 at least, and the operation assumed a practical form through the work of Pagenstecher, whose latest modification, recommended in 1909, is as follows: After an incision of one-third of the corneal circumference and an iridectomy, the Pagenstecher spoon is pressed upon the scleral lip of the wound and carried over the edge of the lens into the posterior chamber, but never beyond the posterior pole of the lens. Then, by pressure upon the lower part of the cornea with a glass rod, the lens is dislocated upward on the spoon, which acts as a gliding surface and never as an instrument of traction. This is practicable only when a large piece of the iris has been excised. The operation of Smith differs from this only in minor details. The spoon, used as a gliding surface, is omitted, and only external pressure is used. Since October, 1907, the writer has operated according to Smith in 69 cases, and can say that he places no reliance upon this method without iridectomy. The iris is so seriously injured that, in spite of all efforts to the contrary, in certainly 35 per cent an iris prolapse has occurred within 24 hours; prolapse of the vitreous has occurred in 17 per cent. Not all eyes are suitable for this method. The expression should be continued only when the edge of the lens appears in the wound upon light pressure. Sometimes the superior edge of the lens appears in the wound first, and in other cases the lens rotates upon its horizontal axis, so that the inferior edge is first delivered, while the posterior surface of the lens looks forward. The operator is not able to effect one or the other delivery at will. In spite of the choice of cases for this operation, there was a prolapse of vitreous in 27 per cent of the cases. In addition to this, the healing process was slower, there was increased liability to inflammation, and chorioidal detachment occurred at least ten times as often as in those eyes which were operated upon by extraction with capsulotomy. This method appears suitable for only a small number of cases, and those are the ones in which it can easily be carried out, apparently because of the minimal adherence between the lens and the membrana hyaloidea. This seems to be an individual peculiarity. There may also be a racial peculiarity among the Hindoos, which may partly explain the remarkable results of Major Smith. Then, too, the average age of cataracts in India is 40 years, while in Berlin it is 62 years. A. F. A.

### Correspondence on Expression of Cataract in the Capsule.

Green, D. W., Dayton, Ohio (*Ophthalmology,* April, 1910). In a letter to Dr. Würdemann the essential characteristics of the Mulrooney operation are described and the essential differences between that and the operation of Major Smith are made clear. In the operation of Dr. Mulrooney a speculum without a stop is used. A liberal corneal incison is made downward and no iridectomy is done. Pressure with a flat spoon or strabismus hook is applied at the upper border of the cornea till the edge of the lens presents, when counter pressure is applied by a curette below the incision, the iris recedes and the lens gradually projects, and when nearly half of it is out of the wound the pressure is withdrawn and the speculum is removed. After this, pressure with the thumb is applied to the globe through the upper lid and counter pressure applied with the scoop until 2/3 of the lens is delivered, when pressure is removed, and the patient is directed to close the eye and to look toward his feet, when, in most cases, the lens slips out, the iris contracts, the edges of the wound become adjusted and escape of vitreous is prevented. In similar conditions Smith would make a liberal upper section and a small iridectomy and remove the speculum. He would lay the strabismus hook on the cornea and sclera below, with the point of the hook directed upward toward the pupil, the point reaching two or three millimeters above the sclero-corneal junction. The instrument is then given a quarter turn with the fingers, so that the point shall bear on the edge of the lens, pressure being made directly backward toward the optic nerve. This generally dislocates the lens, but if it is not thus dislodgėd gentle pressure may be made beside the point of the hook with one end of a spatula in the left hand, until the lens engages in the wound, when the delivery may be completed with the hook. Immature lenses are the easiest to deliver, and here is the great future of the operation, whatever may be the disagreement in other cases. In case of a hypermature, intumescent or any cataract with a small nucleus, he would place the hook in about the same position, but, instead of pressing backward toward the optic nerve and the instrumen lying flat, he would twist or turn the hook between his fingers until the hook stands perpendicular to the cornea, and then give it a further turn or twist until the point gets under the ciliary ridge (body). This requires some pressure, but when the point catches steady pressure is to be made not backward, as in the former case, but directly downward toward the patient's feet. This is the way to turn these lenses over, and will be successful if the nucleus is not too large or the whole lens sclerosed. In all cases, when the lens moves well out of its bed, and is inclined to fall forward, Smith is careful to fold the cornea under it, and to keep the lens pressed well back against the posterior lip of the incision to prevent vitreous escape. The only claim made by Smith is that the instruments and details of the method in use are his own.

A. F. A.

### The Removal of the Cataractous Lens Within Its Capsule.

WRIGHT, JOHN W., Columbus, Ohio (*Ophthalmology*, April, 1910). In 1879 the writer undertook the usual operation for cataract upon a man 82 years old. The man fainted after the incision had been made, and during the syncope the lens was seen lying upon the cheek. There was no loss of vitreous, no protrusion of the iris, the edges of the wound coapted, the pupil was round, the recovery was rapid and the vision was good, and so it remained for several years. In 1880, after completing a difficult incision which necessitated considerable pressure, the lens followed the knife, without loss of vitreous or other injury. There was prompt recovery, with round, central, movable pupil. In 1883, after making the incision, slight pressure was made upon the upper segment of the cornea to introduce the cystotome, when the lens readily escaped through the opening. Noting the readiness with which the lens escaped, with no loss of vitreous, it was determined to make the effort to remove the lens within its capsule, and in fully one-third of the subsequent extractions it was found quite possible to do so with satisfactory results. The technique followed since then is essentially as follows: A medium-sized Graefe's knife is used. The point of entrance is near the sclero-corneal border, but entirely within the cornea, and the exit is directly opposite, the two points dividing off the upper third of the corneal circumference. The cutting edge of the knife is directed forward at an angle of 45° to the plane of the iris and the incision completed. If the pupil has not dilated well an iridectomy is made, but if the pupil is well dilated no iridectomy is done. Then the upper segment of the cornea is pressed down with the finger and, if the lens does not readily present itself, slight pressure with the finger of the other hand may be made near the sclero-corneal border below. If now the lens does not properly present itself and pass out, the capsule may be ruptured and pressure made again. By using the finger, instead of the curette or spoon, the surgeon can handle the eye with more safety and comfort to the patient and with greater facility to the operator. The advantages of this method are that there is less danger of rupturing the hyaloid membrane and causing loss of the vitreous; it is the smallest incision that can be made that will allow passage for the lens; the incision is made in that tissue that is most likely to heal and least likely to take on dangerous complications; the wound does not gape, hence there is no danger of a staphyloma of the iris; there is little danger of infection and suppuration of the cornea; the pressure upon the upper segment brings the lens directly to its point of exit, thus preventing it from slipping behind the iris or bruising the ciliary body; the operation is very simple and painless and often requires but one instrument—a Graefe's knife. This is the method which has been followed for thirty years, in at least a third of the writer's cases, with satisfaction, and much surprise was felt when it was found that other operators had not adopted the same procedure long ago.

A. F. A.

### Rupture of the Sclerotic, with Subconjunctival Dislocation of the Crystalline Lens.

Keiper, George, Lafayette, Ind. (*Ophthalmic Record*, January, 1910), reports the case of a man, aged 39, who had been struck in the right eye with a corn stalk, which caused immediate blindness in that eye. On the following day, when seen by the writer, the eyeball was very soft, tension —3. There was considerable chemosis, and the anterior chamber was filled with blood. The conjunctiva was not ruptured; there was an irregular tear in the sclerotic, about a centimetre long, parallel with the margin of the cornea. Vision was nil. Hot applications and a drop of a 10% solution of atropin sulphate to be instilled every three hours were prescribed. Within three months the lens had gradually become absorbed, the inflammation had ceased, the wound in the sclerotic had healed over, and the blood in the eyeball had absorbed to a considerable extent, though some of it had become organized and formed black bands in the vitreous. Ultimate vision with a + 10.00 D. lens was 20/200. The eye, so far, has not caused any trouble.

O. W.

### A Case of Retinitis Proliferans with Pigmentation, Following Hemorrhage from the Bowel.

Ellett, E. C., Memphis, Tenn. (*Ophthalmic Record*, January, 1910). In this case the patient, a man, 37 years old, complained of blurred vision in the left eye three days after the hemorrhage. Vision and refraction were: R. =

20/30 — .75, Ax. 180° = 20/20; L. = 20/60 unimproved. No cause for the obscured vision could be discovered. The patient then went to New Orleans, where, a fortnight later, Dr. Bruns saw him and reported retinal hemorrhage and exudation, vision 20/30 and 20/100, and attributed the trouble to loss of blood. Later Dr. Bruns reported that the retinal changes were along the superior temporal vessels and in the macular region. Three months later vision was O. S. 20/100. — 1.00 ○ —.50 Ax. 180°=20/30, best to the temporal side. At that time there was a whitish area around and at a little distance from the disc. This area was striated in the retina, covered some of the retinal vessels, and was not pigmented. About four years and a half later the vision O. S. was perception of moving objects. In August, 1909, the patient died in a uræmic convulsion, having suffered with uræmic symptoms for several months previously.

In conclusion the author remarks that in this case there was hemorrhage, followed by œdema, and after some weeks a hemorrhage in the retina, which resulted in a degeneration of the retinal ganglion cells, that led to atrophy of the retina and optic nerve. O. W.

### Concerning a Form of Retinal Disease with Extensive Exudation, Being a Clinical Contribution with the Report of Two Cases.

De Schweinitz, G. E., Philadelphia, Pa. (*Transactions American Ophthalmological Society,* 1909), contributes two histories to the study of this disease of the retina, which is characterized by the presence of an extensive mass of exudation, sometimes associated with vascular disease. Six cases have been studied and reported upon by Coats. Case I. Female, age 19; family history unimportant, except that uncle died of tuberculosis at the age of 52; personal history negative. Physical examination revealed only a slight anæmia. The vision of the right eye had always been very poor; when corrected only 6/150. The media and tissues were normal. The corrected vision of the left eye was 6/20. The sight had been defective for some months and had been failing for three weeks. Ophthalmoscopic examination revealed decided punctate hyalitis, the arteries somewhat smaller than normal and the veins decidedly distended, particularly the upper temporal vein, which was swollen and tortuous. Lying beneath the retinal vessels and crossing the entire length of the eyeground in a vertical direction was a broad area of greenish-white exudation, somewhat knobbed in appearance, over which were scattered numerous glistening masses, probably of cholesterin. This mass in general followed the sweep of the retinal vessels. There was some fringing of pigment at the margins, particularly in the macular region. The general elevation of this exudate was about 2 D, but in some areas it was as much at 6 D. In some places it partly covered the vessels, and in one part there were some twisted vessels, which may have been newly formed. She was given iron, iodin, the iodides, without benefit, and tuberculin for diagnostic purposes, but with no reaction whatever. With a negative reaction to tuberculin and no immediate family or personal history and with no physical stigmata, tuberculosis could be excluded as the essential etiological factor. Case II. A man, about 60, with negative family and personal history, except a gouty tendency for years and a slight arterio-sclerosis, gave a history of rapidly failing vision for three weeks. Vision R. E. 1/60, L. E. 4/4. Four months previously there was no lesion in the patient's eye except vitreous opacities and ametropic chorioiditis, which first appeared in the form of a retinitis of considerable extent, and two small hemorrhages down and out from the nerve head. In the right vitreous were punctate and weblike opacities, and a large area of white exudation above the disc, in the macular region and down and in from the disc, where it assumed a yellowish-white appearance and was elevated 4 D. above the level of the unaffected eyeground. The mass appeared to be for the most part beneath the retinal vessels. The veins were uneven and full. Two years later the exudation had assumed a somewhat knobbed appearance and was elevated as much as 6 D. and showed a brownish yellow color. The veins were dilated and the arteries showed sclerotic changes. The whole process may be best explained by assuming the presence of an exudation which had formed as the result of hemorrhage. A. F. A.

### Neuroretinitis in Chlorosis, with Report of a Case.

Posey, Wm. Campbell, Philadelphia, Pa. (*Transactions American Ophthalmological Society*, 1909), says that although it is rare for structural changes to occur in the fundus in connection with chlorosis, still it occasionally evokes a most intense inflammation of the optic nerve and of the surrounding retina, and these changes have been so marked as to be mistaken for ocular manifestations of brain tumor or of albuminuria. There are about 20 cases on record of optic neuritis associated with chlorosis. In all of them there was a binocular inflammation of the optic nerve and retina of the most intense type, and in all of them the percentage of hæmoglobin in the blood was reduced, although in some cases the reduction was of small amount. In all of the cases there was papillœdema and more or less œdema of the retina around the disc. In nearly all there was a great increase in the size of the veins, while the arteries were often very small, sometimes of normal size, and usually tortuous. Occasionally the star-shaped arrangement of dots and lines around the macula, as in albuminuria, has been seen. Small hemorrhages were noted in a small percentage of cases, particularly at the menstrual period. Frequently the intense headache, with vomiting, dizziness and convulsions, is highly suggestive of cerebral tumor, and the stellate arrangement around the macula is significant of nephritis. The simulation is often so complete that a positive diagnosis can be made at the autopsy only. The association of paralysis of the sixth nerve with the neuroretinitis still further complicates the diagnosis. The simultaneous appearance and duration of paralysis of the sixth nerve and neuroretinitis suggests a common cause, which could hardly be other than an intracranial lesion, and as intracranial thrombosis is a recognized possibility in chlorosis, this has been considered by some as a cause of this condition. By others toxæmia, from the altered condition of the blood, has been assigned as the cause of the trouble, and still others have gone a step further and considered the high intracranial pressure in patients with anæmia and chlorosis as causative. Any swelling of the brain necessarily leads to compression symptoms, and the eyegrounds furnish at an early stage an index of the process. These and other theories have been advanced in explanation of the conditions now under consideration, but the author is inclined to believe that the changes in the eyegrounds are primarily due to the altered condition of the blood itself. If it should be established that the neuroretinitis of chlorosis, as well as of nephritis, are due to increased pressure, the propriety of permanent decompression in selected cases of nephritis and chlorosis will have to be considered. The influence of iron upon the ocular changes in anæmia is very remarkable, and in nearly all the reported cases the vision, which has been much affected, has risen to normal, and the optic nerve and retina, which have been subject to the most severe inflammation, have regained their normal appearance and function under such treatment. A. F. A.

### Hemorrhagic Central Chorio-Retinitis in Nonmyopic Eyes: A Clinical Contribution.

KIPP, CHARLES J., Newark, N. J. (*Transactions American Ophthalmological Society*, 1909), knows of no adequate description of this disease, and the condition is so seldom seen that it has received scant attention. The cause is unknown and treatment is of little avail. It is seen in eyes that are not myopic. A peculiar form of retinitis occurs right at the macula, which would seem to be not in the outer layers of the retina, but rather in the pigment layers, a sort of hypertrophy of the pigment cell itself, a pigmentitis. The inflammation often extends to the chorioid, and then we have the appearance of a spot, grayish in color and surrounded by hemorrhage. In the course of a few months the blood is absorbed, the grayish spot becomes fringed by black pigment, and sometimes black pigment is also deposited on its surface. The symptom which generally calls attention to the disease is a more or less sudden impairment of vision. The external parts of the eye show no signs of disease. The media are usually clear, the optic papilla clear, the retinal blood vessels normal in caliber. The extravasations seem to be in the inner layers of the retina. The chorioid in the macular region is of a dark grayish or blackish color. The discolored area is usually of about one-half of the disc's diameter in size. The retinal extravasations are slowly absorbed without change of color. The darkish area under the retina remains unchanged and undergoes but little change in color for many weeks and months, and then it is generally converted into a grayish-white patch, which later becomes larger than the original area. Gradually some pigment spots develop upon it. The picture is not that of a patch of atrophy of the chorioid, but rather that of a new tissue formation in or under the retina. Central vision is greatly impaired. The impression from the examination of cases in their early stages is that the disease is primarily one of the chorioid. The extravasations seem to come from the capillaries or to be due to diapedesis. Later in the course of the disease the outer layers become opaque, so as to hide the chorioid, but the inner layers remain transparent and the retinal vessels are in no part hidden. The fact that no chorioidal vessels are visible in the grayish area, even years after the appearance of the disease, would indicate that the grayish area of the chorioid is covered by an exudate, or that the outer layers of the retina become so opaque as to hide it. In this disease an extension of the morbid process from the chorioid to the retina through direct contact seems to offer the most plausible explanation for the simultaneous involvement of both membranes. Six new cases are reported. I. A girl, 14 years old, stated that on this day she had discovered that the right eye was blind. The eye appeared normal in all respects except that at the fovea was a round spot of darkish color, surrounded by a bright reflex of oval form and almost white, and a little above this was to be seen a spot of triangular form with rounded angles and of a dark color. Near the fovea were several dark red round spots of the size of a pin's head, and apparently in the chorioid. Six weeks later, in the center of the macula, a round spot of grayish color could be seen, about one-half the diameter of the disc in size, and outside of this a zone of deep red color. During the past twenty-three years there has been no appreciable change. II. A woman of 35 years stated that the vision of the right eye had been reduced for one week. Its vision was 5/60. The eye showed no sign of disease except that in the chorioid, above and outward from the apparently normal disc, numerous small, round, pinkish spots and an irregular distribution of pigment were to be seen. At the macula were a few pinkish, round spots, where also the pigment was unequally distributed. Six days later a dark spot was seen at the macula, not quite as large as the disc, and in the retina, in front of this dark spot, was an extravasation of blood. Fourteen months later a white area of about twice the diameter of the disc was to be seen just below the fovea. Eight months after this, in the right eye, in addition to the changes already noted, a pinkish spot, about one-half the disc's diameter in size, and surrounded by a black ring, could be seen below the atrophic area. The eye was blind. Two years later no change in appearance could be noticed. III. A well developed, healthy appearing girl of 15 years stated that for three weeks the vision of the right eye had been impaired. The eye was normal, except that at the macula the chorioid was much darker than elsewhere, and in the retina, in front of this dark area, there was a light colored extravasation of blood. A month later the extravasation had almost entirely disappeared, but the dark area had not materially changed. She was blind in this eye. IV. Mr. N. W., 34 years old, said that for four months objects had seemed distorted to the left eye. Examination showed a round, greenish spot at the macula, about one-half the diameter of the disc in size, and just above it an extravasation of blood in the retina. Two years later he suffered a similar attack in the other eye. Treatment seemed to influence the course of the disease very little, if any. V. A farmer, 35 years of age, had contracted syphilis a year previously. For two months he had noticed failure of vision in both eyes. In both the vitreous was full of floating opacities. In the left there was a streaked extravasation of blood in the macula region. Mixed specific treatment was inaugurated. Four months later the vitreous had cleared up for the most part, and in the upper part of the macula was a deep red area, about one-half the disc's diameter in size, and in the region of the fovea lutea a dark green spot of about the same size. One year later the vitreous was still clear and the region of the macula was occupied by a spot nearly twice the size of the disc, and on it were several small dots of pigment. VI. A married woman of 45 years had noticed impaired vision of the left eye for a few days. At the macula the retina was hazy, and on it were a number of small, bright red extravasations. The chorioid beneath the hazy retina appeared to be of a darker color than elsewhere. A few weeks later a dark green spot, about half the disc in diameter, was seen at the macula, and over and about it were a number of small, bright red extravasations. Several months later, in place of the greenish spot, was seen a spot somewhat larger, of a yellowish-white color and opaque. No considerable change had occurred two years later, when the patient was last seen. A. F. A.

### Visible Movement of Blood in Retinal Vessels.

Nagel, C. S. G., San Francisco, Cal. (*Ophthalmology*, January, 1910), says that most of the reports of visible movements of the blood in the retinal vessels have been from cases of so-called embolism of the central retinal artery, probably due to a local endocarditis in a majority of cases. In 1908 Rehberg reported a case of aortic aneurysm, with the statement that the retinal veins were relatively large, compared to the arteries, that the blood stream was markedly retarded and plainly visible, the blood column being divided into pieces of varying sizes. The writer knows of no other recorded case and adds the following: J. H., 29, no previous illness, felt a sudden sensation of jumping of the eyes and dizziness, which gradually grew worse, with pain in the eyes, a sensation of blood trying to rush through the skull and attacks of roaring in the ears. Sight gradually failed in the right eye, until it became permanently blind. That of the other eye became hazy, and the patient became blind whenever he attempted to cross the room or to sit upright in bed. The temporal, facial, carotid, subclavian and radial pulses were absent on both sides. The pulse of the arteries of the lower extremities was present and srong. Frequent clots of blood escaped from the right nostril. Pressure on both carotids for about thirty seconds produced deep, noisy breathing, with pallor of the face, and finally twitchings of the face and arms, especially on the right side. With the twitching came loss of consciousness, the patient fell forward and respiration stopped for a few seconds. The diagnosis was made of aneurisma aortæ, with a secondary, ascending atrophy of the optic nerve. In the main branch of the inferior temporal vein of the left eye a slow, interrupted centripetal stream was observed, the blood column divided into segments. This phenomenon was confined to the one vessel and to the left eye. A few days later the segments were longer and moved in a slow and jerky way. Then the appearance extended to several of the other larger veins. Two weeks later similar conditions began in the other eye and no blood current could be seen. Four months later the patient was seen, and appeared to be in much better health. The disks appeared somewhat atrophic, but aside from that the eyes were practically normal, particularly the arteries, and the vision was fair. A. F. A.

### Congenital Absence of the Chorioid with Retinitis Pigmentosa, and Report of a Case.

Alexander, E. W., San Francisco, Cal. (*Ophthalmology*, April, 1910), reports the case of a patient, male, 31 years old, well developed, in every respect normal and well, who had always had night-blindness, which slowly increased, with ring scotomas and contracted fields. His eyes were practically normal but for a marked absence of chorioidal tissue, except in the macular region and in spots in the periphery. The rest of the fundus had a scleral whiteness. The retinal arteries were only slightly smaller and paler than normal. Lines of pigment stretched across the fundi in lace-like patterns anterior of the retinal vessels. The retinæ seemed to receive the blood supply from a few perforating vessels. Two brothers were affected in the same way; they had an uncle and two cousins with weak sight. There was no consanguinity of the parents and no signs of syphilitic taint. The prognosis is that the symptoms will progress slowly, but not to the point of blindness. No improvement can be expected from treatment. A. F. A.

### Some Clinical Observations Upon Sympathetic Ophthalmitis.

Roy, Dunbar, Atlanta, Ga. (*Ophthalmology*, January, 1910). Most ophthalmologists are agreed that enucleation of a primarily affected or injured eye after a fully developed inflammation in the fellow eye is of no benefit. They also agree that if there is an active sympathetic inflammation in the uninjured eye, the removal of the injured member in nowise retards the inflammatory process, and that in many cases it is better to try to save some vision in the offending eye. Three case histories are given illustrating these two statements: I. Three months after injury the injured eye was free from inflammation, and the other eye was the seat of a plastic iridochorioiditis, with deposits on the lens and in the vitreous. Vision was reduced to perception of light only. Enucleation was not done, because it seemed as if the vision of the injured eye was likely to be as good, if not better, than that of the second eye. Large doses of iodides, subconjunctival injections of mercury and normal salt solution, local application of dionin and atropin and active diaphoresis were pushed. Under this treatment the eye improved and both eyes have vision of 20/

70. II. Two months previously the child's eye was injured, but made good recovery under home treatment, when the other eye became inflamed. The uninjured eye showed a marked plastic irido-chorioiditis with inability to dilate the pupil with atropin. The injured eye was atrophic and tender, with a deep linear scar in the cornea. Enucleation was immediately done and active treatment instituted in the sympathizing eye. The vision grew worse, and now the child is practically blind. III. In August the right eye was injured by a flying particle of steel, which could not be removed by the magnet. The eye healed uneventfully. Two months later the other eye began to give pain. A plastic iritis and irido-chorioiditis was found to be present. The injured eye was free from inflammation and was not enucleated. The patient was placed upon a strong solution of atropin locally and large doses of iodide of potash and mercury internally. The eye improved and all signs of irritation gradually disappeared. A month later the injured eye became inflamed and was enucleated. The uninjured eye later became irritated, but soon became quiet. The corrected vision ultimately was 20/20. No further trouble was experienced. Two cases are quoted in refutation of the theory advanced by Fuchs, that epithelioid proliferation is the essential pathologic condition in sympathetic ophthalmitis. A full pathological report forms a part of the paper. A. F. A.

### Temporary Monocular Amblyopia Due to Embolus.

HANSEL, HOWARD F., Philadelphia, Pa. (*Ophthalmology*, January, 1910). A woman, age 21, suddenly noticed a partial loss of vision in the left eye. There was no physical disturbance and no discomfort. The vision was 20/70, and careful ophthalmoscopic examination showed at no time any fundus changes from the normal. The field of vision was not defective, and no scotomata were present. Under mercurial inunction and iodide of potash the vision rapidly improved to normal. Physical examination showed the presence of chronic endocarditis and insufficiency of the mitral valve. Hysteria as the cause was eliminated by the blurring of the whole field, the absence of color defects or reversal of the color field, the complete recovery in a few days and the freedom from the usual stigmata of hysteria. Dropsy of the sheath of the nerve was not probable on account of the unrestricted field, the normal appearance of the veins, the clearness of the nerve surface and outlines, the absence of hemorrhage and of other signs of venous stasis. For the same reason pressure on the nerve in the optic canal may be dismissed. Cortical or cerebral disease was presumably out of the question. This is the first known case of this kind reported. The valvular disease of the heart must be considered as the original source of the amblyopia. The stoppage of the blood created an œdema of the fibers of the nerve. The function of the fibers of the nerve was thus temporarily destroyed, with the resulting deterioration of vision. A. F. A.

### Concerning Quinine Blindness, with the Report of a Case.

DeSchweinitz, G. E., Philadelphia (*Archives of Ophthalmology,* March, 1910), gives the history of a patient in detail and remarks that the symptoms of the case for the most part are those which have been recorded in many similar instances: Sudden blindness, absolute in character during its existence; gradual restoration of central vision; slow renewal with ultimate return of central color sense; permanent reduction of light sense and contraction of the visual field; extreme pallor, also permanent, of the optic discs and marked contraction of the retinal vessels. The shape of the visual fields follows a rule, although not an invariable one, first pointed out by H. Knapp, that in the elliptically contracted field the longest axis is in the horizontal direction. The areas of preserved vision in the form of islands in which the perception of white is retained is an unusual phenomenon. The writer states that he is unacquainted with similar charts of the visual field in quinine blindness, except those which illustrate the case history of a patient with quinine amaurosis reported by Edgar A. Brown. In this instance, however, "the small space of perception of white in the outer periphery" was present only in the left field, and consisted of a triangular patch at the extreme end of, and just below, the horizontal meridian on the temporal side. Such areas in which the perception of white light is retained evidently indicate that the function of the supplying nervous elements of these regions was not destroyed by the toxic action of the drug, but why they should occupy, apparently by preference, the periphery of the temporal fields is not evident. H. G. G.

### Intradural Glioma of the Optic Nerve, with Macroscopical and Microscopical Findings.

FOUCHER, A. A., Montreal, Canada (*Ophthalmic Record*, January, 1910). The patient in this case was a boy 27 months old, who was first seen by the writer on November 27, 1907. The right eyeball was quite prominent, the pupil dilated, and through the transparent media could be seen the optic papilla presenting the appearance of an optic neuritis. The intraocular tension of the globe was very high. Vision appeared to be completely abolished, and in a short time the child began to suffer with violent pains in the eye. A second examination, two weeks later, revealed a decided change; the papillitis seemed to be subsiding, and signs of atrophy had appeared. Enucleation was performed, and the tumor completely removed from all its orbital attachments. Recovery was perfect, and six months later there was no sign of a recurrence of the tumor. A pathological examination determined the diagnosis as indicated in the heading of the article. O. W.

### A Case of Monocular Hemianopsia Due to Ethmosphenoidal Disease.

KRAUSS, FREDERICK, Philadelphia, Pa. (*Ophthalmic Record*, January, 1910). This case, a woman, aged 48, was referred to the writer on account of polyps in the nose, which had existed for some time. An operation consisting of the complete ablation of the middle turbinate of both sides of the nose and opening of the ethmoidal cells was performed. Four months later the patient complained of poor vision; and examination showed that the optic nerve was grey in tint. Refraction under hyoscine showed a myopia of 4 D., with astigmatism of 1 D., vision 5/7 in each eye. Thirteen days later the field showed a faint relative central scotoma for red, which gradually diminished until August 26, 1909, when the whole upper part of the field of vision suddenly disappeared. The field of vision at this time showed a superior hemianopsia, the scotoma being slightly tilted to the temporal side. Muco pus exuded from the left ethmoidal and frontal cells. As a marked prominence was apparent in the region of the sphenoidal bone on the right side, an operation under cocaine was done on that side, which showed that the prominence was a very large posterior ethmoidal cell that encroached on the sphenoid above, and was lined with a very pale mucous membrane. One week after the operation the field had increased considerably, and within two weeks had regained all but a part of the upper nasal quadrant. Improvement continued until October 17, when a fresh infection apparently occurred. There was an extension of the area of blindness and relative scotoma in the field of the right eye with a faint relative scotoma for small red objects. After reopening the sphenoid and removing all granulation tissue in the ethmoidal region, the field of vision again cleared, with a great diminution in the amount of pus. The patient is now free from the headaches from which she had suffered, the field of vision is nearly normal, and the nasal discharge very slight.

O. W.

### Varix or an Angioma Venosum of the Orbit Cured by Alcohol Injections.

Klinedinst, J. F., York, Pa. (*Ophthalmic Record*, January, 1910). This patient, a man aged 31, complained of a swelling of his right eye whenever he stooped forward; it also occurred when he attempted to lie on his right side, or when carrying a heavy weight upon his left shoulder and bending the neck to the right; the trouble had continued for five years, and was growing worse. Examination revealed a soft, compressible tumor of the external half of the right lower eyelid, including the external canthus, with obliteration of the conjunctival sac due to a bluish swelling like an enlarged vein, about one-fourth of an inch in diameter. The vision in both eyes was 15/20, with a low grade of hypermetropia. As the patient declined operative treatment, electrolysis was tried, but neither the negative nor the positive current produced any effect. The writer then conceived the idea of producing inflammation in the vessel walls, and thus causing the disappearance of the tumor. For this purpose the conjunctiva was anæsthetized, and three drops of alcohol were injected into the orbit with a hypodermic syringe. This caused sharp pain for a few minutes, followed by a feeling of soreness in the orbit for a few days. This treatment was repeated once a week for about four weeks, each treatment being followed by pain and soreness, but with a lessening of the swelling in each instance. In each injection the quantity of alcohol was increased two or three drops. One week after the third injection the tumor had disappeared, and bending forward or stooping no longer caused any swelling of the eyelid. Four months have elapsed since the last injection, and there has been no relapse. O. W.

### Differential Diagnosis of Orbital Affections Occasioned by Sinusitis, Including Report of a Case of Thrombosis of the Cavernous Sinus.

REBER, WENDELL, Philadelphia, Pa. (*Ophthalmology*, April, 1910), says that while the orbit itself is a closed cavity, it is surrounded on all sides but one by cavities that communicate with the outer air and are lined with the cephalic mucosa. Direct extension of lesions to the orbit by this means is easy. There is abundant evidence that metastatic orbital disease does not occur spontaneously, but as the direct result of some previous rhinological disease. The superior ophthalmic vein seems to be not only the chief channel whereby blood leaves the orbit, but also to have free communication with the venous channels of the accessory cavities. Birch-Hirshfield has demonstrated that the orbit, like other parts of the body, contains a system of lymphatic vessels. These facts help to explain the frequency of the relation between orbital and rhinologic disease, Birch-Hirshfield stating that out of 684 cases of orbital disease which he has collected, 409 were due to inflammation of the neighboring sinuses. Non-inflammatory lid œdema commonly originates in the sinuses. It may be transient in character and is often recurrent. A low grade of periostitis may result from quiescent sinus disease and the contour of the orbital ring be changed so that the consequent swelling of the orbital tissues may be as hard as bone or may, on the other hand, suggest fluid. Chronic distension of the walls of a sinus may encroach on the orbital contents, the most prominent symptom of which is displacement of the eyeball, generally outward. Ocular paresis and palsies are also found associated with sinusitis. Braden Kyle speaks of the great frequency with which patients complain of pain in the eye muscles when looking upward, in congestive sinus conditions. Posey says: "Many obscure cases of palsy of the extraocular muscles attributed to rheumatism would, if carefully analyzed, finally be found to proceed from sinus disease." Periostitis, optic nerve disorders, often associated with pain on moving the eye, and especially if unilateral in character, orbital cellulitis and abscess are quite commonly due to extension from sinus inflammations. A case history is given which illustrates how sinus disease may produce thrombosis of the cavernous sinus. Miss X. Y. Z., aged 50, in 1900 complained of asthenopic symptoms. She was a large-framed, plethoric woman, who had always enjoyed good health. Her myopia, astigmatism, and presbyopia were corrected. Two years later she returned on account of sudden change in her vision, it having become 3 diopters more myopic than before. The lenses were clear, but she was found to be diabetic and was continued under the care of her physician. Two years later she was the subject of a grippe-like attack with suppurative tonsillitis as a late complication. This had been evacuated, followed by rigors, great prostration, terrific temporal neuralgia, agonizing headache, double vision, tremendously swollen lids, marked protrusion of the eyeball with chemosis and blurred vision. A few hours later the other eye became similarly affected. Six hours later she died. No autopsy was permitted. Septic thrombosis is generally sudden and rapidly proceeds to a lethal issue. In aseptic thrombosis, operation should certainly be resorted to if the condition is diagnosed early enough. When it is remembered that barely seven out of 100 cases of infective thrombosis of the cavernous sinus ever recover, the plea for surgical interference is justified, especially in view of the history of Knapp's case and of the one operated on by Dwight. St. Clair Thomson has recently declared his belief that the majority of cases of this very fatal disease can be traced to pus in the accessory sinuses and to the sphenoid in particular. A negative report from the rhinologist should not discourage the ophthalmic surgeon, because the disease may be latent and elude the most searching study of the rhinologist and, again, but one opportunity is often given him for an examination, and he can in no way be held responsible for conditions which he does or does not find, and if the orbital symptoms are sufficiently marked to indicate sinus disease we should insist on opening the sinus, even though nothing was found by inspection of the nasal cavities. A. F. A.

### Orbital Fibroma with Unusual Clinical Manifestations.

Ring, G. Oram, Philadelphia, Pa. (*Transactions American Ophthalmological Society*, 1909), reports the following case: A young man of 25, well nourished, stated that the development of the symptoms in his left eye began about one year previously, that the eyeball attained its prominence in two weeks and had remained about the same for a year. The left eyeball was pressed forward and, by straining, the proptosis could be increased. The movements of the eye were not noticeably limited, there was no pain, and the only complaint made was of morning closure of the left nostril. No enlargement of the thyreoid, no tumor, and no rapid or irregular pulse was present. The vision of the left eye was 6/12, acc. = 50m. p. p. = 17 cm. There was a marked optic neuritis, the papilla swollen to 3 D. At a later date there was no change except that the v. o. s. had fallen to 6/15. K. I. was ordered up to 300 grs. per day, with negative results. Nearly four years later v. o. s. = 10/200. No change was noticed except that the exophthalmos had greatly increased. All the tissues to the nasal side were dark in color. A growth, not attached above or below, could be felt at the nasal side of the orbit. Ophthalmoscopic examination showed no change except a choked disc and prominent vessels. The health was good, and there were no heart, kidney or thyreoid disturbance. A year later the proptosis had become somewhat more pronounced, and the veins of the eyeball were intensely engorged, particularly near the caruncle, which was also greatly swollen. Just within the upper and inner orbital margin could be outlined a semi-hard mass, apparently not attached, which could be traced from the region in front of the os planum to about the middle of the upper orbital rim. Pulsation and bruit were not present, v. o. s. was reduced to fingers at one meter, the media were clear, the nerve œdematous, there were no hemorrhages or other fundus changes, and the eye was by no means immobile. The other eye was practically normal. Nasal examination revealed a deflection of the septum, but no other abnormality. Illumination of the sinuses was negative except that the left frontal sinus was absolutely black. The accessory nasal sinuses and the ethmoid were found to be free from disease, but a moderately hard growth was found running toward the apex. It did not spring from the outer wall and was not sessile, it was situated in the muscle cone and was of such size that it seemed best to enucleate the eye. After enucleation it was possible to outline the growth, which was about the size of an average walnut, encapsulated and attached only by strands of connective tissue. It was removed without incision and with only moderate hemorrhage. Healing was uneventful. The bulk of the tumor was composed of fibrous tissue fairly rich in cells of the fibroblast type. The tumor contained numerous blood vessels with indistinct endothelial lining, containing partly clotted blood. The tumor seemed to be an orbital fibroma. A. F. A.

### A Case of Orbital Cyst.

Alt, Adolf, and Sauer, W. E., St. Louis (*American Journal of Ophthalmology,* February, 1910), report a very interesting case of orbital cyst, which forges another link in the chain of orbital complications from intra-nasal disease. Alt gives the history as follows: On April 16th, 1908, the patient was first seen complaining of marked protrusion of the left eye. Seven years previously he had noticed a swelling on the nasal side of the left orbit, which gradually grew to its present size. Internal medication had produced no effect, and at times he had had considerable pain and fever. When seen, marked exophthalmos outward and downward, which could not be reduced with pressure, was present, with no pulsation and no vascular sound. On palpation a fluctuating tumor was discovered reaching from back of the region of the lacrymal sac into the orbit. The ophthalmoscope showed a mild papillitis, with thin retinal blood vessels. V. 20/20. Right eye normal. V. 20/20.

On April 18th an effort was made to dissect out the tumor. When exposed the walls were found to be very thin, and the cyst was unavoidably ruptured. A large amount of viscid, slightly blood-tinged mucus escaped. Examination with a probe did not reveal any communication between the cyst and the nasal cavity. The cyst wall was so thin it could not be removed, so the cavity was packed. Recovery was complete in two weeks. Three months later a letter was received from the patient stating that a swelling and some exophthalmos had reappeared, together with some fever. Another letter reported a subsidence of the trouble.

In December, 1908, Alt saw the patient again. His exophthalmos then was as prominent as on April 16th, with a painful swelling in the nasal part of the orbit and high fever. A radical operation was refused, so an incision was made and a large abscess evacuated. The cavity was carefully washed and packed, but the discharge did not disappear, though it lessened considerably. A nasal examination was then made by Sauer, who found no communication between the abscess and the nose. The rhinoscopic examination revealed a deviation of the septum, with a large spur on the left side. The patient insisted he had never noticed any discharge in the nose or nasopharynx. After repeated examinations a small quantity of pus was discovered coming from above the middle turbinate. The ethmoidal cells were then opened from the orbit on February 19th, 1909. A large amount of pus was found, as well as a communication with the posterior ethmoidal cells, which were filled with granulation tissue. The opening was enlarged and the orbital plate of the ethmoid removed with a portion of the middle turbinate. The external wound was allowed to close, and by February 28th there was no further discharge from the nose.

On December 3d, 1909, the patient was re-examined; no evidence of any discharge was found, and the patient had noticed none. After the radical operation was performed the swelling promptly disappeared, the eye returned to its normal position and mobility. Since then the patient has had no further trouble. G. H. W.

### Conjunctival and Other Reaction Tests to Tuberculin in Ocular Tuberculosis.

OLIVER, CHARLES A., Philadelphia, Pa. (*Ophthalmology*, January, 1910), draws eight conclusions. I. Conjunctival reaction and other reaction tests to tuberculin are of determinative use in the etiologic diagnosis of incipient and uncertain cases of local, curable, primary tuberculosis of the eye and its adnexa. These tests in this class of cases must be supplemented by other clinical data. The conjunctival methods are employed to the safest advantage in those cases in which there are no gross signs and symptoms. The cutaneous test in the corresponding temporal or aural region, if the underlying glands are not involved, is the preferred form of testing in most cases, particularly with children, because of its harmlessness of action and surety of result. The degree of reaction to any of the methods is as yet uncertain, because of the uncertain strength of the materials and the changeable resistances of the tissues. No tuberculin therapy should be employed before a local tuberculin test has been made. II. These tests are of both determinative and confirmatory value in the diagnosis of uncertain and curable tuberculosis of the eyeball and its adnexa of systemic origin. Again, latent ocular tuberculosis, without any previous coarse local signs or symptoms, may be brought into gross, clinically recognized activity by these tests. This is true of both local and general tuberculous infection. III. These tests have little value when they are made in or upon tissues that are the subjects of nontuberculous inflammatory reaction. IV. The tests, to be of value, must be free from technical complication and made upon undisturbed and carefully prepared fields. V. Because these tests may be harmful to the eyeball they should be given by an expert and only such doses administered as will give the most delicate reactions. The cutaneous test is comparatively free from danger to the integrity of the eye, and should be the one generally employed with our present knowledge and methods. VI. These tests are of value in determining the character of the therapeutic measures to be employed. In fact, the diagnostic dose may be considered as the initial dose, and the amount and frequency of subsequent doses may be determined by the amount and character of the reaction to this amount given. The employment of these materials for their prophylactic power in infancy and in childhood cannot be doubted, whatever may be their value in adult cases or for curative purposes. Secondary tests should never be made upon the same tissues, but they may sometimes be made upon the other eye after a proper interval of time. VII. These tests are of prognostic value. A positive test, early obtained, and the relative increased degrees of reaction are of favorable prognostic value. Delayed reactions and negative results are often of indifferent value or of bad prognostic import. VIII. These tests, in a negative way, are of use in determining whether the tuberculous lesions of the eye have been healed and cured or that tuberculous foci are so sealed as to be permanently latent. But it must be borne in mind that negative results are not certain and that the error may be as high as from ten to fifteen per cent. Negative reactions may be expressive of want of protective influences and may be significant of bad prognosis for the eye and its related parts. A negative result may thus be of great importance as regards both prognosis and therapy.

A. F. A.

### Remarks on the Tuberculin Treatment of the Eye.

Junius, Cologne, Germany (*Ophthalmology*, January, 1910), says that experience in the treatment of tuberculous eyes with tuberculin is still scanty, but the results, on the whole, have been favorable. Koch's intention was to create antitoxins by carefully introducing tubercle toxin into the body, and through the introduction of dead, specially prepared, tubercle bacilli in the new preparations, to produce defensive substances against the morbid agent itself, to "actively immunize" the patient. Experience has shown that this cannot be done with man. But the habituation to the tuberculosis toxin is possible in many patients. With any of Koch's tuberculins results may be obtained. But this does not apply to the treatment of the eye. Only mild treatment, which primarily avoids any local reaction, especially at the focus, can be suitable for ocular affections. The tuberculin of Béraneck acts very mildly and is particularly suitable for use in eye affections. Its slow action is no disadvantage, as thus the body has time for the formation of a large quantity of antitoxin. Two injections a week are enough. Tuberculosis of the eye is not a primary infection, and for this reason long-continued systemic treatment is necessary, and it must be commenced early.

A. F. A.

### Five Cases of Tuberculosis of, and About the Eyes.

Kerry, Richard, Montreal (*Ophthalmology*, April, 1910), gives a series of five cases, all treated alike and with the same favorable result, which forms an interesting and suggestive group. The treatment consisted of hypodermic injections of four grains of iodoform once or twice a week, according to the severity of the case. The mixture consisted of twenty per cent of powdered iodoform with paraffin oil containing one per cent of carbolic acid. Case I, a little girl of seven years, presented a sinus leading into the lacrymal sac of each eye, around each of which was a mass of reddened and infiltrated tissue, clearly tuberculous, with abundance of tubercle bacilli present in the secretions. Under treatment one sinus closed promptly and the other more slowly, with diminution in the number of bacilli and final disappearance and healing in three months. Two years later the child was reported well. Case II, a girl eighteen years old, showed what appeared to be a mild attack of interstitial keratitis. The eye steadily became worse for two weeks, when the iris became involved and tubercles formed on the anterior surface of the iris. The eye was opened and iodoform was introduced into the anterior chamber, and hypodermic injections were begun. The eye steadily improved, and in three months she was discharged with the eye free from inflammation. About six weeks later she returned with a slight inflammation of the eye, and iodoform was again introduced into the anterior chamber. She soon ceased the treatment, and in about a month she returned with the eye hopelessly disorganized, and it was enucleated. Sections furnished proof that the eye was tuberculous. Case III, a girl eight years old, presented intractable phlyctenular keratitis for two weeks, when tubercles on the iris and loss of substance of the cornea justified a diagnosis of tuberculosis of the eye. Injections of iodoform were used for two and a half months, when the tubercles and inflammation had disappeared. Six weeks later the eye again became inflamed and treatment was resumed. The eye soon recovered and for a year has remained well. Case IV, a woman, aged twenty-six, reported that some years previously she had suffered from an intractable inflammation of the eyes, no diagnosis having been made. She soon developed tubercles of the iris, and examination revealed infiltration of the left apex, with enlargement of the cervical glands of the same side. She was under treatment for ten months before active processes could be said to have ceased. At least six or seven successive crops of tubercles appeared after the inflammation seemed to have ceased, preceded by ciliary injection and some subjective symptoms. The absorption of the exudate seemed to be facilitated by each exacerbation, which always left the eye in better condition than before. The eye has now been free from inflammation for three months. Case V, girl, seventeen years old. The presence of a lesion in the right lung and enlarged cervical glands on the same side confirmed the diagnosis, although there were no tubercles of the eye present. In about four months the eye became quiescent and the patient ceased treatment. Three months later she returned with the same condition present in the other eye, which soon subsided under the same treatment. As iodoform seems to favor tubercle formation, which, so far as the writer's observation goes, is always followed by dispersion and absorption, there is no tendency toward encapsulation, and the danger of the disease becoming dormant is practically nil, which lessens considerably the chance of recurrence. In those cases which have shown activity again the relapse has always appeared within six weeks and has quickly subsided under renewal of the injections. Thirty years ago Billroth tested the use of iodoform in tuberculosis, and it was then noted that it was more efficacious when introduced into the tissues around the sinus than when introduced into the sinus itself. So far as the writer knows, these patients are doing well, so far as the tuberculous lesions are concerned.

A. F. A.

### Adenocarcinoma of the Pituitary Body. Report of a Case Under Observation for Four and a Half Years. Pathological Examination.

SHOEMAKER, WILLIAM T., Philadelphia, Pa. (*Transactions American Ophthalmological Society*, 1909), reports a case of adenocarcinoma of the pituitary body in a woman thirty-five years of age, which he had had under observation for four and a half years, with autopsy and pathological examination by Drs. George P. Müller and Alfred Reginald Allen.

The fields were bitemporal hemianopic in character, one eye subsequently becoming practically blind and the other maintaining good central vision throughout. Several recurrences of optic neuritis with swelling of the disk were noted, each attack of neuritis leaving the nerves more atrophic. A change of countenance and an increased fulness of the face toward the end were suggestive of commencing acromegaly, but the hands and feet underwent no perceptible change in size or figure. General nutrition remained excellent, and only very late did mental deterioration commence.

In the four years' course of the disease, there were three climaxes, or "storms," at which times there seemed to be a concentrated outbreak of all the symptoms she ever had. The knee jerks were always active and at times exaggerated; Kernig's sign was generally positive; station and gait remained good until the last year, when she walked with some uncertainty and hesitation. Glycosuria with sugar 1½ to 2 per cent was noted before death.

Tumors of the hypophysis are not uncommon. Most of those reported have been sarcomas, some have been adenomas, and a few carcinomas and adenocarcinomas. They are of special interest in relation to and bearing upon the questions of acromegaly and the function of the pituitary body. The anatomical situation of the hypophysis is such as to give a fairly constant and quite characteristic symptomatology in case of tumor or enlargement of that body. Headache, very frequently occipital, would seem to be present in nearly every case. Vertigo is generally present during the course of the disease. Nausea and vomiting are quite variable. The intellectual faculties sometimes suffer and often do not. Drowsiness has often been spoken of as quite characteristic of the disease. Glycosuria is a frequent complication and obesity has been observed in some cases. Interference with some of the cranial nerves would seem to be an absolute necessity with any progressive growth or enlargement of the hypophysis. The symptoms referable to the involvement of the optic chiasm are very variable. Most often we have bitemporal hemianopsia, unilateral and, finally, double blindness with optic atrophy. But, as variations, we may have optic atrophy without hemianopsia, the presence of scotomas, partial contraction of the visual field, and paracentral as well as hemianopic scotomas. Choked disk is said to be uncommon. Optic atrophy has been noted in most of the cases studied. The third nerve is often affected. Bruno claims that ptosis is frequently one of the first, if not the first, symptom. An important and significant cranial nerve involvement is that of the trigeminus. Photophobia, due to irritation of the trigeminus, may be a prodromal symptom. Trigeminal palsy follows. The olfactory and auditory nerves may be affected, and careful examination of the smell and hearing should be made. Operation for the removal of the hypophyseal tumor has been attempted several times during the last four years. The great difficulty consists in reaching the tumor in such a way as to be suitable for the removal of the growth. The best way would seem to be by way of the nasal cavity. The nose is turned back and the entire nasal cavity reamed out until the apex of the cone so formed reaches the bed of the hypophysis. Even when the diagnosis has been made it is a question whether the surgeon should be asked to attempt to remove the growth lest he substitute one fatal condition for another. A. F. A.

### Preliminary Note on Increased Intraocular Tension in Cases of Epidemic Dropsy.

MAYNARD, F. P., Calcutta (*Ophthalmology,* January, 1910). During the last eight months the writer has seen more than twenty cases of this complication. In some, recovery has occurred without a relapse, and in others, deep cupping has been followed by optic nerve atrophy and blindness. One usually finds the cornea a little steamy, the anterior chamber normal or deep, the pupil small or moderately dilated and acting but sluggishly to light; there is sometimes complaint of pain, but rarely is there any injection of the vessels. The tension is usually distinctly increased; sometimes it is normal, and in one case it was diminished. Halos are seen intermittently. Usually the failure of vision follows the dropsy, but in some cases it is noticed at the same time and in two it preceded. Two-thirds of the cases showed pathological cupping of the disk. The retinal veins are usually engorged. Young people mostly are affected. It seems reasonable to attribute the peculiar symptoms to a passive congestion of the uveal tract leading to increased production of lymph, and an increase of tension. This transudation would be more effective if the lymph secreted were of a more colloid nature than ocular lymph usually is. There is no experimental knowledge that such is a fact. A. F. A.

### Symmetrical Lymphomata of the Lacrymal and Salivary Glands (Mikulicz's Disease).

ZIEGLER, S. LEWIS, Philadelphia. Pa. (*Transactions American Ophthalmological Society,* 1909; *New York Medical Journal,* December 11, 1909), describes the chronic, non-inflammatory, symmetrical enlargement of the lacrymal and salivary glands, to which attention was first called by Mikulicz in 1888. It begins, as a rule, in the lacrymal gland, but soon involves the parotid and sub-maxillary glands. The objective symptoms of the disease are chiefly a dense, brawny swelling of the glands involved, which remain freely movable under the skin, as a rule. The subjective symptoms are dryness of the conjunctiva, obstruction of vision from ptosis, dryness of the mouth, and limited ability to swallow or talk, owing to the interference of the enlarged sub-maxillaries. Many observers have noted associated respiratory disturbances. Very many have been mouth-breathers. Bacterial infection seems to be unlikely. No specific germs have ever been isolated. From the evidence it seems more probable that the disease arises from some perversion of glandular function and that the pathogenesis is chemotactic, or that toxic fluids that chemically irritate the glands are absorbed from the accessory sinuses and transmitted through the lymphatic capillaries to these contiguous glands. Respiratory obstruction not only hinders the evaporation and drainage of these sinus secretions, but also causes sub-oxidation and other disturbances of metabolism. The pathology is obscure. Nearly all microscopic studies have shown that the parenchyma proper plays a completely passive role and that the gland is enlarged solely by the enormous small-cell infiltration of the interstitial connective tissue; in other words, that the growth is a true lymphoma, or lymph tumor, as distinguished from the glandular swellings of leucæmia and pseudoleucæmia, syphilis, lipoma, tubercular adenitis, lymphosarcoma, and carcinoma. The absence of other systemic disturbances, failure to react to diagnostic agents or specific medication, and the essentially chronic course and spontaneous involution of the tumors make a differential diagnosis not difficult. The prognosis is favorable, and the course of the disease is favorably influenced in many cases by such remedies as improve lymphatic action and systemic oxidation. Arsenic has proved valuable, and the iodides and oxidizing agents also. All respiratory obstructions must be removed, surgically or otherwise. Extirpation is seldom indicated.

A. F. A.

### The Value of the Sero-Diagnosis of Syphilis in Ophthalmology. A Preliminary Report.

COHEN, MARTIN, New York (*Archives of Ophthalmology*, March, 1910), calls attention to the frequency of syphilis as a causative factor in diseases of the eye, as well as the difficulties which are often encountered in determining this etiological element in individual cases, and presents the results of a series of investigations with the hope of ascertaining of what value the application of the serum test might be in the practice of ophthalmology. He reports in all 130 cases, which include most of the organic diseases of the eye. Of this number, 60 (or 45%) gave a positive, and 72 (or 55%) a negative

Noguchi reaction. In 29 of the cases, which gave either definite clinical evidence or a reliable history of syphilis, 14 gave a positive, while 15 gave a negative reaction. Of 32 cases in which there had been antisyphilitic treatment, 14 gave a positive and 18 a negative reaction. In the combined categories of doubtful and obscure etiology, there were 101 cases, of which 46 (or 45%) gave a positive and 55 (or 55%) a negative reaction. H. G. G.

### The Importance of Correct Diagnosis of Diseases of the Eye.

DAVIS, A. EDWARD, New York (*Medical Record*, New York, January 29, 1910), directs attention to the eye conditions in autointoxications, accessory sinus diseases and tuberculous affections, and emphasizes the necessity for making a clear distinction between autointoxication and autoinfection. Quoting from Chapman, he says: "Only substances which originate in or are elaborated within the system should be regarded as causing autointoxication."

Taking into consideration reports of the various clinical observations, he is of the opinion that intestinal toxæmia may be regarded as a contributing etiological factor in certain forms of recurrent iritis, chronic iridocyclitis, certain forms of scleritis and episcleritis, recurring ulcers at the sclerocorneal margin, retrobulbar neuritis and paresis of accommodation.

Of the minor affections of the eyes which may be secondary to accessory sinus diseases special reference is made to asthenopia which is not relieved by glasses, tonics, rest, or even after a course of rest to the ciliary muscles under the influence of atropin. In illustration of this, the writer cites two cases of severe asthenopia which were relieved only after an operation on the nose; in the first, the middle turbinate on the left side was swollen and pressed against the nasal septum; the second had a polyp on the left side, attached to the cribriform plate which pressed on the frontal part of the upper and middle turbinates. O. W.

### Ophthalmic Nursing.

FOSTER, MATTHIAS LANCKTON, New York (*New York Medical Journal*, April 9, 1910), says that the fundamental principle in all nursing is the same: to learn what the physician would do for the patient, to understand how it should be done, and then to do it as he would if constantly present. The ophthalmic nurse should receive first a thorough general and then a special training in a special hospital. He finds two errors current; one that ophthalmic nursing is essentially distinct from general nursing, the other that a well-trained general nurse is fully competent to attend eye cases; the former renders a good nurse fearful, the latter overbold. A knowledge of the principles of antisepsis is urged in contradistinction from that of any particular method of their application, because the nurse can then adapt herself readily to the method employed by any surgeon. The methods of antisepsis employed in general surgery are not applicable generally in ophthalmic surgery, in which other methods, based on the same principles, must be used. The ophthalmic nurse should have naturally, and must cultivate, a light, firm hand. In cleansing an eye none of the secretions must be left behind, and yet the patient must not be hurt; the importance of gentleness, lightness and firmness in making the necessary manipulations is strongly emphasized. Always hold a dropper with its point down. Always see that an eye is clean before instilling an antiseptic solution. To instill a drop, draw the lower lid down slightly, bring the point of the dropper as near as possible without touching the tissue, and place a drop gently on the conjunctiva, keeping the dropper in a plane horizontal with the face. If allowed to fall from a height the drop will cause pain, impel the patient to give a nervous start and induce a sharp closure of the lids. A useful manoeuver with a nervous patient is to have him lie on his back, place a few drops in the inner canthus and gently open the lids so that the fluid can enter. Toxic effects may be guarded against by pressure on the lids at the inner canthus, occluding the canaliculi. Some attention is given to the proper way to hold a child while the eyes are being examined or treated and to the application of heat and cold to the eye. The moderate degree of heat furnished by a poultice is rarely needed and may do harm, so it is essential that the nurse should maintain as nearly as possible the degree of heat or cold ordered, which is accomplished by very frequent changes. Cold is used principally in infectious inflammations, for its inhibitive action on the microorganisms, and the nurse must care for her hands lest they communicate the disease to her own, or another person's eye. For such applications the writer prefers eight or ten small pieces of muslin allowed to freeze on the surface of a block of ice and torn off in turn to lie for a few seconds on the eye. For heat he prefers cloths wrung out of very hot water, applied as hot as they can be borne and changed very frequently.

In the preparation of a patient for operation the business of the nurse is to put the patient in as good a condition as possible, not only by looking after the excrementory organs, preparing the room and dressings and following the directions of the doctor, but also by calming the natural nervousness of both the patient and the family. Preparations should be made without fuss and should be completed an hour or two before the surgeon arrives. The preparation of the eye itself, the instillation of cocaine, the boiling of the instruments, the application of sterile towels about the patient's head on the operating table, are considered in turn. He thinks thirty seconds about the right length of time to boil the knives. The operating room nurse should always be able to assist if needed, watchful and quietly efficient.

The writer is not inclined to keep patients in bed longer than over night after a capital operation on the eye, because they usually feel better and encouraged if allowed to sit in a chair and to be at least partially clothed during the following day, and this has a favorable influence on the healing of the wound. He would keep the patient in bed after certain accidental injuries in which the wound tends to gape, in certain diseases, and when the patient does not want to sit up, in the latter case because the contentment of the patient favors healing more than any enforced position. He condemns the custom of keeping a patient with bandaged eyes in a dark room. Deprived of the sunlight to which it is accustomed, the body weakens, reparative action is not so good and the mind turns toward melancholy, while if the eye is properly bandaged no light can enter it to cause irritation. He believes tradition alone to be responsible for this custom and that in time it will cease to exist.

The duties of the nurse at the dressings, and the importance that the nurse act up to the spirit as well as the letter of the surgeon's instructions in the management of the case are next dwelt upon. In conclusion, emphasis is again laid on the facts that ophthalmic nursing is based on the same principles as general nursing and differs only in certain details and technique, and that the ophthalmic nurse must possess delicacy of touch, delicacy of manipulation, gentleness and firmness combined to a greater degree perhaps than any other surgical nurse.

### Demonstration of the Size and Position of the Angle Alpha.

Howe, Lucien, Buffalo, N. Y. (*Ophthalmology,* January, 1910). The angle alpha is defined as the angle between the optic axis and the visual axis. It may be demonstrated easily by removing the prisms from the tube of the Javal-Schiötz ophthalmometer, thus converting it into a simple telescope, placing an illuminated point directly above the telescope, and attaching a small glass ball to one of the mires. If an eye placed before the telescope looks into it the illuminated point will be reflected from the anterior surface of the cornea into the telescope tube, and the reflected image from the posterior surface of the lens will also be seen entering the telescope, not in the same vertical plane as the reflection from the anterior surface of the cornea, but to one side of it, that is to say, the optical axis of the eye does not correspond with the visual axis. If the glass ball on the mire is moved toward the left of the person being examined, he continuing to look at the glass ball, the two reflections into the telescope will gradually approach the same vertical plane and eventually become perpendicular to each other. The angle that the eye has turned in bringing the two images into the same vertical plane, as measured on the mire-circle, will be the angle alpha required.

A. F. A.

### A Way to Remove All the Aberrations from Frameless Glasses.

Rhoades, J. N., Philadelphia, Pa. (*Ophthalmology,* April, 1910). says that color aberration from the edges of frameless glasses and the harassing band of white light from the same source may be obviated by beveling the edges of both the distance glass and the near wafers about 45°. This light is particularly painful to those with sensitive retinæ and to those who have to look into the morning and evening sun, like engineers, motormen, chauffeurs and the like. A great drawback to this plan is that the inner, beveled edge appears to the outside observer like a line of scratch parallel to the edge of the glass.

But the relief to the sensitive wearer is often very great. Again, the yellow glitter of the gold temples is often very annoying. This might be obviated by blackening or oxidizing the metal. A. F. A.

### The Value of Correcting Lenses in General Pathology and Method of Examination.

Blaauw, E. E., Buffalo, N. Y. (*Ophthalmology,* April, 1910), claims that binocular vision brings into activity the whole mechanism of both eyes and, through the optic nerve, the posterior lobe of the brain. Every physiological activity depends on metabolism, hence the simple act of vision implies use of nutritive material. The directing centers are of the superior order, and near work and the increasing demands of modern civilization must make serious inroads upon the nutritive supplies. The efforts of the visual apparatus to overcome the slighter degrees of refractive error or muscular imbalance are especially exhausting, and particularly so with those who are already nervously or physically weak, and the dwellers in the cities suffer more than those who live in the country. While there is a class of examiners who insist on the use of a mydriatic in determining the refractive error, the writer has never done so, and regards such a custom as unscientific, objectionable, troublesome and unnecessary for the patient. A. F. A.

### A New Skiascope.

Cooke, Clinton T., Seattle, Washington (*Ophthalmology,* January, 1910), describes an instrument to be used in skiascopy which obviates the necessity of laborious and time-wasting changes of lenses in the dark room and the usual difficulties in the use of the older skiascopes. In this instrument the twenty-eight lenses are arranged as in the Morton ophthalmoscope and are at the end of a hollow arm 62.5 centimeters long, containing the shaft actuating the movements of the series of lenses. Geared to the end of the arm nearest the operator is an indicator showing the strength of the lens through which the patient is looking. The whole is vertically adjustable on the base. When adjusted in the dark room the series of lenses is revolved in front of the eye until the image reverses, and then the nearest lens, stronger and weaker, is compared, and the most perfect correction is noted without disturbance of the eye of the patient or of the operator. The correction of the other axis is immediately made in the same manner. The method is simple, direct, accurate, and free from the clumsy drudgery and annoyance of any preceding method. A. F. A.

### Improved Lantern for Testing the Color-Perception.

WILLIAMS, CHARLES H., Boston, Mass. (*Transactions American Ophthalmological Society,* 1909). The latest pattern of this lantern differs from the preceding one of 1903 only in being able to show one, two, or three colored lights at one time, and to have the colored area of three different sizes, and in that the intensity of light may also be varied by means of a rheostat. A. F. A.

# ABSTRACTS FROM ENGLISH OPHTHALMIC LITERATURE.

(GREAT BRITAIN AND THE ENGLISH COLONIES.)

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### Diseases of the Lymphoid Tissue of the Conjunctiva.

COLLINS, E. TREACHER (*The Royal London Ophthalmic Hospital Reports*, January, 1910). The paper is a study of trachoma and is the outcome of the writer's experience in the ophthalmic schools under the control of the poor law authorities in London, in which schools he has in the past five years seen 700 children with trachoma, many of them in the very early stage of the disease. The ophthalmia schools are arranged in what is known as the cottage system and have large and beautiful grounds. That trachoma is a contagious disease has been proved by inoculation experiments. The writer has seen very definite confirmatory evidence in two patients who contracted the disease in the school. The symptoms at first resembled acute mucopurulent ophthalmia, but did not yield in the customary manner, and when the congestion of the palpebral conjunctiva had subsided the typical lymphoid follicles became apparent.

He refers to the minute, slightly ovoid bodies discovered by Prowazek and Greeff in the cells from the trachomatous conjunctiva, which are thought to be the cause of the disease. Whatever may be the contagious element, we may feel sure that it is one which is not spread through the air, is easily killed by drying and is not spore-producing. It is the transference of moist discharge from one person's eye to another which disseminates the disease. The position in which the trachoma organism is usually situated is like that of the tubercle bacillus, the fibroadenoid layer.

Prowazek insists that these ovoid bodies are met with only in the epithelial, not in the lymphoid cells. Greeff states that after a case has been treated with sulphate of copper these bodies disappear from the superficial cells and the secretion long before the case is cured. He suggests that they pass into the deeper parts, where they can still excite changes. Whether the organism of trachoma can attack the intact epithelium is not yet determined. Wherever the trachoma is located, the changes which it or its toxins excite are most marked in the adenoid layer of the tarsal conjunctiva and the retrotarsal folds, i. e., in those parts of the conjunctiva over which the epithelium is thinnest. He considers the appearance of gray scattered avascular spots rather smaller than a pin's head in the tarsal conjunctiva of the upper lid as quite as early a symptom as the presence of follicular enlargements in the upper retrotarsal fold. Their appearance is quite characteristic and of considerable diagnostic importance, but they may be obscured from view at first if there is much mucopurulent ophthalmia and become visible only when the congestion and other symptoms have subsided.

The trachoma organism appears to be a nonpyogenic one, the reaction which is excited by its toxin being an immense new formation of lymphoid tissue, a large increase of plasma cells and in the later stages a formation of fibroblasts. Trachoma is essentially a chronic disease. The acute symptoms which sometimes usher in an attack or which arise from time to time in the course of it can always be accounted for by mixed infection. He thinks it incorrect to speak of two types of trachoma, a papillary and a follicular type. The essential element of trachoma is the follicle: it is the characteristic form of reaction on the part of the tissue to the irritation of the trachoma organism. Papillary formation may exist in trachoma and sometimes be so extensive as to obscure them, but without the presence of lymphoid follicles we have no right to diagnose a case as one of trachoma. A characteristic of the trachoma follicles is their tendency to become confluent and produce bodies resembling in shape the grains of boiled sago. Microscopical examination of a follicle which has been ruptured by expression shows invasion of its walls and cavity by polynuclear leucocytes. Besides the follicular formation there is a considerable formation of plasma cells immediately beneath the epithelium between and beneath the follicles: also in the later stages a formation of fibroblasts. The fibrous tissue which forms in trachoma is probably mainly developed from fibroblasts derived from connective tissue cells. It is possible for very extensive replacement of the adenoid layer by fibrous tissue to take place without much distortion of the lid being produced. It is the formation of fibrous tissue in the form of a longitudinal band along the line of the sulcus subtarsalis which most frequently gives rise to entropion.

The palpebral conjunctiva differs from skin in three particulars:

1. The thinness of the epithelium.
2. The absence of papillæ.
3. The presence of the adenoid layer immediately beneath the epithelium instead of the dense fibrous tissue of the corium.

The reason for the reduction of the epithelium of the tarsal conjunctiva to such extreme thinness is to allow the blood in the rich vascular plexis of the adenoid layer to impart warmth to the avascular cornea when the lids are closed. It is frequently asserted that all cases of trachoma result in the formation of fibrous tissue. This is, however, one of the later phenomena of the disease; and it would seem reasonable to suppose that if cases are treated sufficiently early they might sometimes be cured without its occurrence. Pannus is the result of irritation from a roughened eyelid and also a real infection of the cornea with trachoma. In the anterior layers of the cornea affected with pannus are lymphoid follicles having the same characteristics as those met with in the lids in trachoma. The formation of lymphoid tissue in a structure like the cornea, devoid of any normal lymphoid tissue, serves to show that a trachoma follicle is not a mere hypertrophy of pre-existing lymphoid tissue; but that it is a new production for the purpose of defense against the attacking organism.

The lymphoid follicles are eliminated in three different ways:

(a) By rupture of the follicles on the surface and discharge of their contents.

(b) By intercurrent inflammation, causing follicles to become invaded with polynuclear leucocytes and absorbed.

(c) By the replacement of the adenoid layer by fibrous tissue, which, cutting off the blood supply to the follicles, causes them to atrophy.

Of the different treatments for trachoma, those which have proved most efficacious aid in getting rid of the lymphoid tissue in one of these three ways. Immediately after expression he paints the surface of the ruptured follicles with a 1-in-100 solution of perchlorid of mercury. For expression he prefers flat Grady's forceps rather than Knapp's roller forceps. He employs two pairs of forceps, holding the upper lid everted with one and with the other grasping the retrotarsal fold and squeezing the follicles out of it. He often finds it necessary to repeat the procedure several times. The operation of excision of the retrotarsal folds is a very effectual way of getting rid of the follicles and shortening the duration of the disease. He has not performed Kuhnt's operation of removal of the tarsus and conjunctiva. Sulphate of copper, he thinks, maintains the foremost place as the best application to stimulate the absorption of follicles which cannot be removed by expression. With Merck's extract of abrin, so-called "Jequiritol," we have a most efficacious means of exciting, by a chemical irritant, an acute inflammatory attack of limited duration. He has frequently employed it in cases of pannus with good effect. The X-ray treatment has the advantage over all other methods of treatment in being painless. It has been employed at the Ophthalmic Schools with variable results, steady improvement in some and but little amelioration in others. In no case have any disagreeable consequences been occasioned by the use of the X-ray. His experience with radium has not been very encouraging. The third method, forms of "grattage," act to a large extent by stimulating the tendency to fibrous tissue formation. He states that in his experience he has found it possible to so thoroughly eradicate the disease that it shows no tendency to relapse. Rapid improvement in some cases is often made in the first weeks, but complete cure of the disease always takes several months and sometimes years, whatever procedure be adopted. He does not consider any case satisfactorily cured so long as any follicular enlargements can be detected in any part of the conjunctiva and until all abnormal discharge has ceased.

It is probable that when the conjunctiva has its adenoid layer replaced by fibrous tissue, its power of resisting the attack of microorganisms becomes lowered, and such eyes are consequently more readily subject to infection by other organisms. The conditions in which nontrachomatous follicular enlargements occur may be classified as follows:

(a) In atropin and eserine irritation.

(b) In children with a general tendency to adenoid formations.

(c) In mucopurulent ophthalmia.

The presence of fibrous tissue formation is not pathognomonic of trachoma. Besides occurring in the process of cicatrization of injuries and burns, it may also be an accompaniment of other diseases, as tubercle, in pemphigus and in severe membranous ophthalmia and spring catarrh. This latter differs, however, from trachoma in the complete absence of follicular formation and also in the development of immense numbers of eosinophiles. A remarkable feature of the fibrous tissue formation in spring catarrh is the way in which it disappears as the disease subsides. It produces no contraction and leaves little if any sign of its former presence.

W. E. B.

### A Case of Obstruction of the Central Vein and Glaucoma; With Remarks.

INOUYE, DR. TATSUKI, Tokyo (*The Royal London Ophthalmic Hospital Reports,* January, 1910). The writer reports briefly the history of the patient and in complete detail the microscopic examination of the eye. It is not absolutely certain from the history whether the obstruction of the vein or the glaucoma is the primary disease, though he believes the obstruction preceded the glaucoma. The chief interest of the case lies in the state of the corneoiridic angle, which was only partially occluded. The obstruction of the vein was probably due to proliferation of the endothelial and subendothelial tissues. Upon the question whether the glaucoma precedes or follows the obstruction of the vein he has studied all the cases in literature since 1892, in which complete or almost complete obstruction of the central vein was proved by pathologic examination and in which the dates of the occurrence of the obstruction and of the glaucoma were given with some exactitude, 32 cases in all.

In these obstruction was first, and glaucoma followed in 31 cases. The shortest interval was 13 days, the longest about 11 months, the usual average about 100 days or rather less. In his opinion the following is the sequence of events: The obstruction causes retinal hemorrhage, the blood vessels in disintegrating produce toxins, the toxins are continually carried to the angle of the anterior chamber owing to defective drainage by the central vein and its collaterals, the tissues about the angle become inflamed, adhesion is formed and glaucoma is the result. W. E. B.

### Retinitis Circinata, and Its Relation to Other Forms of Retinitis With Hemorrhages and Exudates.

FISHER, J. HERBERT (*The Royal London Ophthalmic Hospital Reports*, January, 1910). The author reviews the cases reported by Coats in the Ophthalmic Hospital Reports for 1909 of retinal disease with massive exudate. His first case supports the view that the white spots of circinate retinitis are second to blood exudate in the deeper layers of the retina, and it confirms Fuchs' statement that the exudate may disappear. The second case shows degeneration of retinal vessels associated with cardiac disease in a young boy. In association with the local arterial degeneration there developed an incomplete ring of dead white spots corresponding in appearance, situation and depth in the retina with those of retinitis circinata. This case suggests that if the exudates of circinate retinitis are of hemorrhagic origin and in so far are related to Coats' cases, differing in the fact that the hemorrhage does not invade the subretinal space, and if the ordinary case of retinitis circinata is due to vascular degeneration, given the unusual condition of vascular degeneration in early life, changes of a circinate type may occur in childhood.

His last case seems to him to afford a very strong connecting link between Coats' cases and retinitis circinata. His conclusion is that the pathological processes which result in the appearances we know as retinitis circinata are the sequel of hemorrhage in the outer reticular layer of the retina—whether the characteristic elliptical shape is to be explained on the limitations which Henle's layer affords I do not pretend to say. Hemorrhages which invade the subretinal space from the outer reticular layer may organize, as Coats shows, into prominent masses of fibrous exudate; this condition may be found associated with retinitis of a circinate type.

W. E. B.

### Cyst of the Pigment Epithelium of the Iris.

Worth, Claud (*Royal London Ophthalmic Hospital Reports,* January, 1910). The author gives a drawing and notes of a case illustrating this condition. There is no reason to suppose that there had ever been any iritis. W. E. B.

### Rupture of the Lamina Cribrosa.

Hepburn, Malcolm L. (*Royal London Ophthalmic Hospital Reports,* January, 1910). The author presents an early and a late drawing of the appearance of the fundus of an eye in which this injury took place following a blow upon the eye from a stump against which the person fell. W. E. B.

### Three Cases of Post-Operative Infection.

Hancock, W. Ilbert (*Royal London Ophthalmic Hospital Reports,* January, 1910). These three cases of infection followed operation for cataract and presented a clinical type almost exactly similar and characterized by:

(a) A well-marked latent period (12, 11, and 7 days respectively).

(b) Recurrent attacks of iridocyclitis, with intervals of almost complete absence of inflammatory reaction.

(c) The presence of a hypopyon and extensive keratitis punctata. Two of them were due to the staphylococcus albus in pure culture, and while a few weak colonies of the xerosis bacillus were found, in the third the clinical course and the reaction to staphylococcus vaccine makes him believe that it was due to the same organism, an organism which by most authors is looked upon as being merely a saprophyte of the normal conjunctival sac. He believes the source of infection in all the cases was ectogenous, though all three had extremely septic mouths and the latent period was long. In all three a good deal of soft lens remained at the extraction. Now it has been shown by experimental investigation that injection of staphylococcus aureus into the A. C., unless in large quantities, simply gives rise to an iritis which heals spontaneously. If, however, the lens has been freshly needled or extracted so that there is a mixture of soft lens and aqueous, it is found that panophthalmitis follows the merest trace of the culture.

There can be no doubt that eyes with a great deal of soft lens after extraction often show an alarming amount of reaction, which is generally attributed to the irritation of the soft lens matter per se. Personally, I believe that in most of these cases the inflammatory reaction is the result of a mild infection, and for that reason have for some time always irrigated the A. C. if the pupil after extraction is not black, and with the most encouraging results.

The advantages of irrigation are:

(1) The removal of soft lens and therefore of a good medium for bacterial growth.

(2) It is invaluable in simple extraction, when it is often impossible to express the soft lens matter pent up behind the iris.

(3) It is often possible to leave the A. C. full and to wash the tags of capsule from the wound.

The objections are:

(1) The possibility of infection, which with care should never take place.

(2) The possibility of detaching a piece of epithelium which might be implanted in the A. C., a complication of the greatest rarity.

Vaccines were used in all three cases, and the results were disappointing. As regards the local treatment, he believes from the experience in one of the cases that the irrigation of the anterior chamber with peroxide saved the eye, and he would repeat that procedure in a similar case and not delay it long. W. E. B.

### Teratoma of the Orbit.

COULTER, R. J., AND COATS, G. (*Royal London Ophthalmic Hospital Reports,* January, 1910). This rare condition was seen in a baby three days old. The eye was pushed straight forward so that it lay outside of the orbit, with the eyelids stretched around its equator. A tense, soft tumor could be felt in the orbit. The proptosis increased, the cornea and conjunctiva ulcered. He tapped the cyst as a temporary expedient, but the relief was of short duration. The cornea sloughed, and when 19 days old the baby died of exhaustion. Microscopic examination showed the tumor to consist of a jumble of tissues derived from all three embryonic layers, as follows:

(1) Connective tissues of various types.
(2) Skin.
(3) Brain substance.
(4) Intestine.
(5) An internal gland
(6) Respiratory mucous membrane.
(7) Cysts with linings other than intestinal or respiratory mucous membrane.

He gives a summary of all the known cases of teratoma of the orbit. The cases group themselves into two classes, those in which the members of the second individual were externally recognizable, and those in which there was only an amorphous mass. It is common to both groups, however, that structures derived from the epi-meso and hypo-blast are present. This is the distinguishing mark of the true teratoma. Various hypotheses have been advanced to account for these tumors and these he discusses at some length. W. E. B.

### The Chorioidal Blood Supply of the Retina.

HEPBURN, MALCOLM L. (*Royal London Ophthalmic Hospital Reports,* January, 1910). The author arrives at the following conclusions:

1. The posterior layers of the retina are supplied entirely by

the posterior ciliary arteries, which, under normal conditions, receive no assistance from any other vascular system.

2. The posterior ciliary arteries distribute their blood supply in three main sections, which nourish separate parts of the retina.

3. These three main sections supply:
   (a) The macular region.
   (b) The midperiphery.
   (c) The extreme periphery.

Each one is distinct from the others, constituting individually a series of terminal circulatory systems and showing varying degrees of susceptibility to disease.

4. The division into these three areas is a more or less arbitrary one, since there is no accurate demarcation in the field of vision corresponding to the point where one begins and the adjoining one ends; but it may be roughly stated that the macular region seldom extends beyond the 20° circle, and the midperiphery, although subject to slight variations, seldom extends beyond the 60° circle on the temporal side and 40° on the nasal side.

5. Each main vascular area is again subdivided into several regions, each of which shows the same characteristics as the main area, and exhibits a similar variation in susceptibility to disease.

6. In primary pigmentary degeneration the whole system is involved; and under these circumstances the degenerative processes are in a state of progression and follow a definite order, the midperiphery being the first to succumb and the macula the last of all.

7. In secondary degeneration any one of the three may be affected, either in whole or in part, and many irregularities are shown, as well as the possibility of the affection remaining isolated to one part, often without giving any sign of extension after a number of years.

8. As regards recovery, after the retina has once lost its function in any part, this depends entirely on the possibility of establishing a collateral circulation through the retinal system. The midperiphery shows the greatest response to any attempt at restoration of vitality, whilst the macula, although it resists disease longer than any of the others, is generally entirely beyond repair when once the blood supply through

the chorioidal circulation has been interfered with. Therefore vascular affections of the macula are attended with a grave prognosis, while the midperiphery frequently contains gross pathological changes with but little disturbance of function.

9. The probable reason for the behavior of the different parts towards recovery is to be found in the extremely poor retinal circulation in the macular region, which does not lend itself readily to a collateral circulation, whereas in the midperiphery the retinal vessels are at their maximum size, thus more easily encouraging the establishment of a new blood supply.

10. One is justified in drawing the foregoing conclusions from a critical examination of the fields of vision, and they support Leber's contention that the posterior chorioidal vessels anastomose very little with each other. There is also evidence to show that the branches supplying the extreme periphery are given off close to the entrance of the optic nerve.

W. E. B.

### A Clinical Study of Posterior Traumatic Cataract.

Hudson, A. C. (*Royal London Ophthalmic Hospital Reports,* January, 1910). This is a clinical study of the behavior of the crystalline lens under the influence of injury, direct or indirect. He reports a considerable number of cases, 44 in all, arranged in various groups, and concludes that the essential factor in the production of the phenomena under discussion is the swelling of the actual lens fibers, which may be preliminary to further changes. It seems probable that direct injury or concussion of the lens tissues, rather than direct access of the aqueous humor, should be held responsible for the production of the posterior opacities; for on the one hand there is good evidence that perforation of the lens capsule is not essential for the production of posterior traumatic cataract, and on the other perforation, although frequently, is not invariably, associated with posterior opacity. The reopening of an old wound in the capsule is, however, very liable to be followed by complete opacification of the lens.

The prognosis, both immediate and remote, in a case of traumatic cataract should always be guarded. In the early stages it is difficult to say whether improvement will occur, or, if it does occur, will be maintained. Mere improvement in vision is not to be regarded as a safe criterion in affording a favorable prognosis, for clearing of central opacities may be associated with progressive changes at the equator of the lens. On this account especial attention in examination should always be given to the presence and behavior of changes at the lens periphery, more especially as the mere presence of these is probably a feature of unfavorable import. In every case a lens which has been affected by posterior traumatic cataract is to be regarded as a damaged tissue abnormally susceptible to deleterious influences. W. E. B.

### On the Treatment of Sympathetic Ophthalmia by Large Doses of Salicylate of Sodium, Asperin, or Other Salicylic Compounds.

GIFFORD, H. (*Ophthalmoscope,* April, 1910). The urgency of large doses of salicylate in the treatment of sympathetic ophthalmia is forcefully dwelt upon by the author, who draws his conclusion not only from his experience in treatment of this condition, but also in hundreds of cases or iritis, interstitial keratitis and traumatic or other infections. The best results have been obtained by very large doses, giving approximately 1 gr. in 24 hours for every pound of body weight (for an average man, 150 grains), and if this does not produce immediate marked improvement the daily dose is increased to 200 grains. The writer usually gives 30 grains in 2 drachms of brandy with water five times daily, omitting one day out of every four or seven days, and as the inflammation subsides it is continued on two days out of three for two or three weeks longer. It the stomach rebels, it may be given per rectum in 60 gr. doses, two or three times daily. No harm has been occasioned by it except occasionally the dose has had to be lowered or stopped because of delirium.

The author has treated 16 cases in this manner since 1896, all of which were genuine sympathetic ophthalmia with fresh iritic adhesions, deposits on Descemet's membrane, vitreous opacities and other signs of inflammation. Of these 16 cases one, which was not seen until two or three months after the disease began, showed no improvement, and one other, in which the large doses of salicylate had to be discontinued because of recurrent delirium, left the hospital in decidedly bad condition. Of the other 14 patients, 11 recovered with V. = 20/30 or better: that is, three obtained V. = 20/30;

three, V. = 20/20 minus; one, V. = 20/20; four V. = 20/20 plus. One child was too young to be accurately tested, but the eye was entirely clear and practically normal when last seen.

Since using large doses of salicylate, the author has had two bad, one moderate, one good, and twelve very good results. In all cases except the one, the first eye was enucleated at the beginning of the treatment.

Besides the salicylate and atropine the patient is started at once on inunctions of mercury, and at intervals between the courses of mercury injections of atoxyl or arsenic in some other form is given.

"It goes without saying that in place of salicylate we can use salicylic acid, aspirin, or some other salicylic compound, although, in my own experience, the chief value of these is to give the patient a change when the salicylate becomes too distasteful. My main point is to insist that in the treatment of sympathetic opththalmia some salicylic compound should be our sheet-anchor; and that it should be given at once in large doses, so as to abort the disease if possible, because one cannot say at the start whether any given case is going to be severe or light. At present the evidence in favor of this plan of treatment is so great that, in my opinion, no patient with sympathetic opththalmia can be said to have had a fair chance unless he has received it." W. R. P.

### Two Cases of Cryptophthalmia.

COOVER, DAVID H. (*Ophthalmoscope*, April, 1910). The author briefly mentions nine cases of cryptophthalmia previously reported, and gives the findings in two of his own cases, a mother and child.

The mother, a young woman of 24 years, born with upper and lower lids of both eyes firmly united. The brows were well formed, and along a shallow depression, corresponding to the palpebral fissure, were two rows of hair. The left eye had been opened at two years of age, and four years later the right was opened, but in both instances a small ball was found imbedded in connective tissue, without sign of corneal tissue. Two years later the small amount of light perception which had been preserved up to this time was lost. There was no history of consanguinity nor of congenital defect.

The patient married and five years later a child, perfectly formed in every other way, was born. The lids were united by what appeared as scar tissue, but was probably modified conjunctiva. The case was similar in every way to that of the mother. Operative procedure on the right eye revealed an imperfect eyeball, upon which a small point, about 2 mm. by 3 mm., could be seen on the nasal side of the globe, which had the appearance of imperfectly developed corneal tissue. There was no possibility of any vision and the lids were again closed. W. R. P.

### Optic Neuritis, Choked Disk, or Papilloedema.

Horsley, Sir Victor (*Brit. Med. Jour.*, March 5, 1910). The author mentions the discovery of the mechanical factor in choked disk by Manz in 1870, which has recently been confirmed by Cushing and Bordley, and gives a historical summary of the work done on the subject. The present points for discussion are:

1st. The localizing diagnostic value of papilloedema or optic neuritis.

2d. That part of the disk which first became edematous as a consequence of increased intracranial tension.

3d. Proof of Gunn's view of the mechanism whereby the macular "star" figure is produced.

4th. The phagocytes of the retina in neuroretinitis and their origin.

1st. He discusses the views of Deutschmann and Paton which are contrary to his own, and reports a series of 18 cases from the hospital notes and 3 cases from his private practice, and concludes that "ipso-laterality of the tumor and the neuritis is the rule and that contra-laterality is the rare exception."

2nd. He suggested three years ago that the edema always begins at the upper nasal quadrant of the papilla. Further observation has convinced him of this fact. He recites two postmortem examinations of early neuritis and gives several very beautiful photographs.

3d. The star figure is a postmortem change, as was proved by drying a specimen, which showed no star during life, so as to obtain tension effects. A well-marked star was obtained. Microscopically the tension effects showed first in the nerve fiber layer.

4th. He discusses the histological characteristics of the retinal phagocytes. His conclusions are:

1st. The maximal intensity and age of the papilledema or optic neuritis in cases of increased intracranial tension is of the highest value in clinical localization of the lesion and is ipsolateral with the maximal pressure effects of the latter.

2nd. Papilledema produced by increased intracranial tension commences at the upper border of the optic papilla and invades last the inferior temporal quadrant.

3d. The macular figure, as Mr. Gunn has stated, is caused by tension lines centered at the fovea, the greatest stress being just beneath the intima.

4th. The phagocytes of the retina consist of several kinds, as follows: (1) Wander-cells; (2) connective tissue corpuscles; (3) epithelioid corpuscles of the nerve fiber layer; (4) epithelioid corpuscles of the outer granular layer—the two latter varieties being in close relation to the supporting fibers of Müller. E. S. T.

### Miners' Nystagmus.

Butler, T. Harrison (*Brit. Med. Jour.*, March 5, 1910). In all colliery centers miners' nystagmus is a very common disease. The symptoms are very characteristic. The eyes oscillate violently, the lids twitch, and the man appears to be, and often is, in a state of great nervous tension. Visual acuity is generally as low as 1/10. Reading is impossible and usually the man is compelled to give up work. The history is usually that the man has worked for some years in the pit and has in most cases been a "holer," one who lies on his side and undercuts the seam of coal. He first notices that at the end of a day's work the lights begin to "dance," and this grows worse, until the dancing is constant. Hemeralopia may be present. The etiology is obscure, but has probably been wrongly stated in the text books. It has been supposed to be due to cramp of the muscles when looking upward, but the miner does not strain his eyes upward; he makes himself comfortable and moves his head and not his eyes. There is no proof that any muscle fatigue exists and conclusive proof that it does not. If muscle fatigue did exist, it would produce a tetanic and not a clonic spasm. Nystagmus is essentially a disease of the collier and is not found in metal mines. The only theory which can explain the disease is that suggested by Reid, of Nottingham, and Nuel, of Belgium, that it is a disordered cerebration, a defect of the brain, not of the eye muscles, produced by the peculiar work—long-continued rhythmic movements of the pick in comparative darkness. The miner must leave his work and must never return to it. Many cases recover completely, but some never entirely lose their symptoms. E. S. T.

### Infantile Glaucoma or Buphthalmia.

Allport, Wilfrid (*Brit. Med. Jour.*, March 5, 1910). The author mentions the theories as to the causation of the disease and records a case in which sclerotomy was followed by an unusual measure of success. The child was three years old and the tension was high. An anterior sclerotomy was done after the usual method, but the tension soon rose again. He then made a large section through the sclera as if for a very peripheral cataract section, leaving a bridge of intact conjunctiva at the summit of the incision. A small cystoid scar developed, as had been desired, and the tension remained normal. A similar operation was done on the other eye, and two years later the tension was normal, corneæ were clearer, and the child could distinguish objects about the room "with clearness and precision." E. S. T.

### Notes on a Case of Cyclophoria.

Bradburne, A. Alisen (*Brit. Med. Jour.*, March 5, 1910). The author defines this condition as an "abnormal rotation of the eyes." A case is cited and symptoms are given in detail. They are in the main asthenopic. The patient, a middle-aged man, had been unable to find glasses that were comfortable. One lens was a cylinder, and in reading the vision with that eye was blurred. The author found that there was an increased rotation of the eye in reading, which threw the cylinder "off axis." A cylinder was adjusted at a different axis for reading and the patient experienced great relief.

E. S. T.

### Optic Neuritis and Suppurative Otitis.

Barr, J. Stoddart, and Rowan, John (*Brit. Med. Jour.*, March 26, 1910) The paper embodies a resumé of 100 previously published cases and 60 new ones. The cases are tabulated in full and the causation of optic neuritis in this connection is discussed. The conclusions are as follows:

1st. Optic neuritis may occur in purulent middle-ear disease without obvious signs of an intracranial complication. (Eleven times in 160 cases, or 6.8%.)

2d. Apart from optic neuritis vascular changes of a lesser degree are frequent. (Thirty-nine times in 160 cases, or about 25%.)

3d. Cases of purulent middle-ear disease, in which optic neuritis or vascular engorgement of the fundus is present, are much less amenable to local treatment than those in which the fundus is normal.

4th. As a general rule, an improvement in the eye condition is accompanied by improvement in the aural condition, while an increase in the intensity of the changes in the fundus, or their persistence, is associated with less amenability to local treatment and greater gravity to the ear conditions.

5th. The most probable cause of vascular engorgement of the fundus or optic neuritis is serous meningitis (diffuse or localized).

6th. Optic neuritis caused in this way is not usually followed by atrophy, and unless there are other symptoms demanding it, opening of the dura mater is unnecessary.

Cases showing these changes should be closely watched and the eye symptoms regarded as additional reasons for the early performance of the radical mastoid operation, while in cases that do not show fundus changes, or if the changes tend to clear, we may with more confidence look for a favorable response to conservative treatment. E. S. T.

### A Case of Intracranial Tumor With Alterations in the Color Fields.

Bramwell, B. (*Lancet*, March 5, 1910). The author reports four cases of intracranial tumor, one particularly presenting a marked constriction of the fields for yellow and blue, as compared with the fields for red. In one other case "the fields, both for white and for colors, were markedly constricted, but there was little or no interlacing of the color fields." Of the other two cases. in one case there was some constriction of all the fields, but no interlacing of the color fields. In the other case the fields showed right-sided hemianopsia, with marked constriction of the fields for white and for colors on the left side. There was no interlacing of the fields.

The first case did not develop choked disk until 37 days after he was admitted to the hospital (November 27, 1909), and it was on this day that the fields were charted. A later examination reported "the optic neuritis has rapidly increased and is to-day (January 21, 1910) very marked; the fields for white and for colors are much more constricted than they were: the interlacing of the color fields is still very marked; the fields for green have now completely disappeared; and, what is a very curious feature (if it is a fact confirmed on subsequent examinations), the fields for white are now in places smaller (more constricted) than the fields for red, blue and yellow."

All the cases reported had more or less marked choked disk. N. M. B.

### Congenital Anterior Staphyloma.

Coats, George (*Ophthalmoscope*, April, 1910). The author has endeavored to present the arguments, based mostly upon pathologic-histologic data, both in favor of and against the two principal theories of congenital anterior staphyloma, with the conclusions he has drawn therefrom.

The two explanations are spoken of as the "ulcerative hypothesis" and the "malformation" or "non-differentiation hypothesis." The first, because of the similarity, both macroscopically and microscopically, to a post-natal anterior staphyloma; and the second, because of an old hypothesis recently revived in an opinion by E. Treacher Collins, namely, a lack of differentiation, because of the failure of the mesoblast (from which the iris and the pupillary membrane are to be formed) to separate from the cornea in the formation of the anterior chamber. This process failing, the posterior layer of mesoblast remains adherent and neither iris nor cornea develop normally. The drainage is interfered with, the tension is raised and the fused cornea and iris become bulged out between the lids.

The malformation hypothesis obviates certain difficulties of the ulcerative hypothesis. (1) The difficulty of explaining how the infection gains access to the cornea. The circulatory path is unlikely, because of the avascularity of the cornea, and, moreover, the condition corresponds, not with the endogenous infections of later life—as interstitial keratitis—but with the perforating ulcer of exogenous origin. On the other hand, the fetal eyelids, which are normally closed from the third month until shortly before birth, would presumably preclude infection from the liquor Amnii. (2) The child when born seldom shows any evidence of conjunctival inflammation.

While the above difficulties are all negative, the non-differentiation hypothesis encounters the positive obstacle in that the details of structure do not fall in line with the explanation. (1) The appearance of sharply defined loss of substance on the superficial aspect of the cornea is incompatible with mere lack of differentiation between the cornea and the subjacent structures. (2) The occurrence of vessels in the superficial layers of the pseudocornea can only be explained down growths—in one case (Runte) cavities lined with surface epithelium present in the pseudocornea, and the stroma of cicatricial tissue, seem impossible of explanation by failure of differentiation. (4) The presence of uveal pigment in the superficial layers of the cornea and (3) the irregular epithelial by a perforation with iris prolapse. (5) The strongest evidence from structure is derived from the state of the lens. In some cases it is totally absent; in other cases its shrunken remains adhere to the cornea or it is normal and in situ—three conditions corresponding with what obtains after postnatal ulcer. The lens may be absent from the zonula (which is developed by a process of stretching as the lens recedes from its former contact with the epithelium of the secondary optic vesicle) still present, proving that the lens was formerly in position and its absence due to subsequent extrusion through a perforation.

The histological findings in a case of congenital anterior staphyloma illustrating these points are given with microphotographs. The cornea was very well formed in the periphery, but extremely thin in the center. The membranes of Bowman and Descemet were present in places in the periphery, absent centrally. The iris was almost totally adherent and its stroma was much atrophied, but the sphincter and sphincter border were well preserved on each side. The central thinned area corresponded, therefore, with the pupil; it was lined posteriorly not by pupillary membrane, but by a long piece of lens capsule, with lens remains on its anterior surface. The lens remains were partly in contact with the capsule, partly imbedded in the pseudo-cornea, at some little distance from it. The thinning was almost entirely due to loss of the superficial layers, and was so extreme in places that the surface epithelium was in contact with the lens capsule; one edge of the area was abrupt, the other more shelving (as is common in post-natal serpiginous ulcers), and the whole was lined with epithelium, except at the site of the post-natal perforation, which had occurred at the thinnest part. Following the perforation the vitreous had escaped, and a loop of the retina had become displaced into the gap. The zonula was present. The tissues of the thinnest part had the hypercellular, irregular appearance of cicatricial tissue in a fairly advanced stage of organization.

An extremely rare and interesting abnormality was also seen in this case. It consists in the forward displacement of a portion of the uvea relative to the parts lying more externally. The root of the iris, ciliary processes, pars plana and ora serrata, while in normal relation to one another, have suffered a complete forward displacement, so that the ciliary processes arise in front of the ending of the membrane of Descemet, the pars plana is on a level with the ligamentum pectinatum and the ora serrata is actually in front of the ciliary muscle, lining it with chorioid in which the membrane of Bruch is distinguishable. It seems to be due to the carrying forward of the displaced layers, as the staphyloma gradually bulges, and does not occur in post-natal staphylomata, because the parts are then more firmly knit together, and cannot be slid on one another in the same way, but simply become elongated and atrophied.

No mere lack of differentiation can explain the fact that fully developed ciliary muscle is lined by fully developed chorioid, and the relations of the structure found at birth were not due to faulty differentiation, but to displacement; differentiation and development must have followed their normal course up to a fairly advanced period of fetal life, and the displacement was the displacement of a uveal tract already well formed in consequence of the gradual bulging of the staphyloma.

In reported cases of congenital anterior staphyloma, corneal nebulæ, without adhesion of the iris, have been noted in the other eye, which cannot have been due to lack of differentiation between the iris and the cornea, the iris being well formed. On the other hand, a perforating ulcer in the one eye and a non-perforating in the other would give rise to exactly the same conditions.

Some members of a family have been born with anterior staphyloma and other with nebulæ. In one family four of six children were born with either anterior staphylomata or corneal opacities, which favors hereditary transmission, but yet there is no instance of transmission from one generation to another, nor is it ever associated with undoubted pure malformations in the eye or elsewhere. Such a familial incidence might be due to a general diseased state of the father or mother, or to some localized disease of the uterine mucous membrane.

If the congenital anterior staphyloma is due to a corneal perforation caused by an infective organism, only two paths of entrance are possible, the endogenous, through the circulation; and the exogenous, through the liquor Amnii. The weight of evidence seems to make the exogenous infection the more probable.

That the perforation must occur a considerable time before birth is evidenced by the completeness of fusion of the iris with the pseudo-cornea and the high organization of the cicatricial tissue.

The resemblance of congenital post-natal anterior staphyloma may mislead us into assuming that it is necessarily associated with maternal vaginitis or infantile conjunctivitis. Clinical histories tend to make it certain that the gonococcus has no part in the causation of congenital anterior staphyloma, or only in the most exceptional cases.

The actual path of infection presents only three possibilities: (1) The vagina, (2) the uterine mucous membrane, and (3) the placenta. The most plausible route is through the infection of the liquor Amnii, which may occur from an infected uterine wall or a lesion of the placenta, breaking through, not into the fetal circulation, but into the liquor Amnii. It is necessary to suppose, at least, a small defect in the closure of the fetal lids. This aids in explaining the great rarity of congenital anterior staphyloma, for the combination of infection of the liquor Amnii with nonclosure of the eyelids must be very uncommon.

In summarizing the author says he believes "congenital anterior staphyloma to be due, like the post-natal form, to an ulcer perforating the cornea from without; the process is probably, but not certainly, microbic, and the infection reaches the cornea through the liquor Amnii. Congenital anterior staphyloma is probably the best authenticated instance known of this species of infection. There is no sufficient evidence to show whether the microbes reach the liquor Amnii from the vagina, from the uterine mucous membrane, or from the placenta, or whether the path of infection is always the same. It is necessary to suppose a partial patency of the palpebral fissure." W. R. P.

### A Case of Congenital Partial Palsy of the Third Nerve With Cyclical Contraction and Dilation of the Pupil.

Paterson, J. V. (*Ophth. Review*, May, 1910). A girl of four years with evident, but not marked, right-sided ptosis. By a voluntary effort the child can raise the lid to an extent which almost hides the defect. The upward movement of the right eye is very defective, but movements in other directions appear quite normal. The child has a habit of tilting the face upwards and inclining the head a little toward the left.

The rhythmical change in the size of the right pupil is very striking when attention is drawn to it, but in the examination of a rather too lively and restless child the pupillary phenomena might easily escape the observer's notice. The whole cycle of events from one period of maximal contraction till the next takes usually about 30 to 40 seconds, but is subject to considerable variation. These variations appear to be partly due to the fact that the child's attention is very difficult to fix, and that by changing the point of fixation she introduces disturbing factors into the ocular innervation. The size of the pupils when in the stage of fullest contraction is about 2½ mms., and when in the stage of fullest dilatation 5 mms. Extreme contraction or dilatation is not reached at any stage of the cycle. On looking closely one sees that as the pupil dilates or contracts the movement is not continuous, but rather wave-like or oscillatory. Contraction, when reached, is maintained for only a very brief period (one-half second), while the stage of dilatation lasts a much longer time. The cycle of events is easily disturbed by such factors as an effort of accommodation, or convergence, or by light stimulus. While the pupillary contraction in response to any of these stimuli was easily noted, yet one found it very difficult with so young and restless a patient to say which of these factors had the strongest influence and at what part of the cycle the response of the pupil to stimulation was most prompt. The consensual light reflex from the other eye was readily elicited and appeared to produce much the same effect on the right pupil as direct stimulation. The refraction in the phase of pupillary dilatation was almost emmetropic, while during the phase of greatest contraction a very marked myopia could be noted by the shadow test. The change in the refraction began suddenly just as the phase of the greatest contraction was reached, and its duration was extremely short (2 or 3 seconds only).

The ptosis also varied during the pupillary cycle, but the variation was only slight. The difficulty of observation was here greatly increased by the child's inability to keep still, but there was no doubt that a distinct elevation of the lid tended to occur rhythmically just at the moment of extreme contraction of the pupil.

The left eye showed no abnormalities. Vision appeared to be perfectly good in each eye and the fundi were normal.

N. M. B.

### The Injurious Effects of Light on the Eye.

McMullen, W. H. (*Ophth. Review*, April, 1910). The author states that "eclipse blindness, snow blindness and electric ophthalmia are the clinical conditions in which the injurious action of light is almost unmistakable."

The conclusions drawn from experimental observations of the effects of light upon the eye are discussed under three heads:

(a) Effect upon the superficial parts of the eye.
(b) Effect upon the lens.
(c) Effect upon the retina.

The results of the experiments of Schanz, and Stockhausen, Birsch-Herschfield, Widmark, Hess and Best are referred, to and the conclusion reached that:

(a) In view of the experimental proof of the irritant action upon the conjunctiva of ultra-violet light, it is not unreasonable to suppose that in all these cases the conjunctival irritation is due, to a great extent at least, to the action of these rays.

(b) It has been suggested that senile cataract may be due to action of ultra-violet rays. It is pointed out that a large proportion of rays possessing a high degree of chemical activity is absorbed by the lens, a part being converted therein into visible rays by fluorescence, but a larger part not producing visible effect. Since lens opacities can be produced experimentally by the concentrated action of such rays in a short time, it is suggested that the action of the ultra-violet rays present in the sunlight and the artificial light may lead in the course of many years to the formation of lens opacities, and, further, that since modern artificial illuminants emit light comparatively rich in ultra-violet rays, the use of these illuminants may tend to cause cataract. No evidence of any real value has been brought forward in support of this suggestion, and until such evidence is forthcoming it would appear as reasonable to avoid sunlight, because one can blind oneself by looking at the sun, as to avoid the use of certain lamps because they give light of a character which can be made to produce lens opacities under certain absolutely abnormal conditions.

(c) Reviewing the evidence at hand, one is led to the conclusion that all the rays which reach the retina may play some part in the production of the disturbances resulting from exposure to intense light. It seems, however, that such disturbances are more liable to occur when the light contains a high proportion of rays of short wave length. And since the photo-chemical activity is inversely proportional to their wave length, it is not improbable that the blue, violet and few ultra-violet rays which reach the retina are most active in causing damage: but the action of rays of greater wave length cannot be regarded as negligible. N. M. B.

### Congenital Total Color Blindness With Day Blindness.

JULER, F. A. (*Ophth. Review*, March, 1910). The author reports three cases, aged 8, 5½ and 3, respectively, in one family. They are consecutive children in a family of seven. The three patients seem healthy and appear to possess average intelligence.

There is no history of consanguinity in the parents, who both come from large families, and there is no clew that any relatives are similarly affected nor that there is any partial color blindness in the family. The mother was knocked down when eight months pregnant with Case I in a cycle accident and was rendered unconscious for a few minutes.

The pupils react sluggishly to light and dilate slowly in the dark. Media clear and fundi practically normal. Visual acuity low, 6/LX being the best vision obtained with lenses. Photophobia marked in bright light, lids well opened on dull days, nystagmus intermittent and frequent, not changed by attempts at fixation or increased illumination. Total color blindness, the colors being grouped according to their light components. Both older children knew that they were color blind and always asked the next boy at school which paint they had to use. Visual field in oldest was not satisfactory, but no central scotoma could be demonstrated. There appeared to be some narrowing of the periphery. "No microscopical examination has yet been made, but, taking Grunert's theory of cone-blindness, the symptoms can be explained as follows: The amblyopia is accounted for by the absence of cones, which are normally resident at and near the macula, causing a complete or relative central scotoma; it may be found that in some cases rods supplant the cones in this region.

"The total color blindness is also explained by the absence of retinal cones. It is now well recognized that the cones possess the fine form and color sense. The color blind rods permit only a small acuity of vision in bright light from bleaching of the visual purple.

"The photophobia may be looked upon as an attempt to diminish the light intensity by narrowing the palpebral aperture so as to allow the rods to obtain their maximum perceptibility. These cases appear to be in a condition of more or less constant dark adaptation to avoid bleaching of the visual purple, which is possibly more active than normal.

"With regard to the effect of illumination on the visual acuity, it has been shown in some cases (Uhthoff and others) that the best vision can be obtained with moderate illumination (12 C. P.). On increasing the light the vision of the achromatic eye decreased, that of the normal eye improved, whilst by decreasing it both the achromatic and the normal vision diminished. The expression, day-blindness, is thus to some extent correct, but it refers more truly to the discomfort which is experienced by these patients in a bright light; some say they are quite dazzled by a white central cloud on looking at a bright object.

"The nystagmus is not always a marked feature. It may be considered as partly due to the central scotoma and partly a phenomenon for relieving successive retinal points from the strain of fixation.

"The visual field in most cases shows no peripheral contraction; out of eighteen cases examined for central scotoma eight gave a positive result; in some cases a very protracted examination is necessary, and it is often impossible to be sure of a negative result on account of the nystagmus."

N. M. B.

### On Trachoma Bodies.

McKee, Hanford (*The Ophthalmoscope*, May, 1910, p. 329). After speaking of the varied results of the older methods of research, the author reviews the great work done by Halberstädler and v. Prowazek, who, while working in Java on syphilis, found in the epithelial cells in cases of trachoma inclusions which were constantly present. Prowazek believed them to be parasitic and called them "Chlamydozoa." They also noted dark blue spots close to the nucleus—the "plastin clots," which they believed to represent the reaction of the cell to the intruding microbe. These plastic cells have been confused with the real trachoma bodies.

The author mentions a case of trachoma from which smears were made and stained with Giemsa (1 drop of stain to 15 drops of distilled water). In every slide during a period of eight days the trachoma bodies were found. He (McKee) describes them as round bodies, smaller than cocci, lying within the protoplasm of the epithelial cells, sometimes grouped in masses, as a rule close to the nucleus of the cells. A piece of palpebral conjunctiva was excised and fixed in Zenker's solution. Numerous trachoma bodies were found within the epithelial cells. The bodies prepared on the seventh day were much larger than those prepared during the first few days. The halo-forms were found in the initial slides.

Whether the inclusions are parasitic or not, or whether they are the causative agent of trachoma, has not been determined, but, according to the author, their specific nature is fairly well established. W. R. P.

# ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE.

BY

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### The First German Blind Day.

The first German Blind Day met in Dresden in June. (*Woch. f. Ther. und Hyg. d. Aug.*, April, 1909.) It was recommended that compulsory education should apply to blind children as well as seeing children; that proper institutions as well as schools for the higher education of the blind should be erected; also, that they should be protected by the Government in cases of injury and sickness, and that a home for indigent blind should be provided. M. W.

### Ophthalmologists in Germany.

GREVEN (*Woch. f. Ther. und Hyg. d. Aug.*, April 1, 1909) collected statistics concerning the number and distribution of ophthalmologists practicing in Germany. In September, 1908, there was a total of 913 in Germany; that is, 2.87% of practicing physicians. This is an increase of seventeen over the year previous, or 1.7%. There is one oculist to every 67,500 inhabitants.

The greatest number of these were located in the large cities, there being 117 in Brandenburg (Berlin and suburbs) alone. These figures include only those limiting their practice to diseases of the eye. M. W.

### Unusual Pupillary Phenomenon.

Sommer, G. (*Woch. f. Ther. und Hyg. d. Aug.*, March 18, 1909), had under his care, for the treatment of glaucoma, a patient who was also suffering with epilepsy. The pupil responded readily to eserine and became very small.

During consultation the patient was suddenly seized with a severe epileptic attack, both pupils immediately became fully dilated and fixed, the diseased as well as the sound eye. The tension was not affected. On recovery from the attack, the pupils remained moderately large for a while, the reaction coming on gradually. The glaucomatous pupil, which for several days had been under strong influence of eserine and pilocarpine, gradually resumed the small size which existed before the attack. M. W.

### An Apparatus for Stereoscopic Eye-Muscle Gymnastic.

Lotz, Arnold, Basel (*Woch. f. Ther. und Hyg. d. Aug.*, July 15, 1909), described an apparatus which seems to be of considerable value. It consists of a metal rail with a clamp and handle in the middle, which can be attached to the running board of an American stereoscope in place of the ordinary picture holder. Behind the metal rail is a screw, which is attached to the picture holder, which can be turned so as to approximate or separate the two component parts of the picture to be viewed. By this means we secure an unlimited number of different lateral distances of the fusion point. The machine can be purchased of Strubin & Sohn, in Basel, for seven marks and a half, including series of pictures. M. W.

### Further Remarks on Dazzling (Blendung).

Schanz and Stockhausen, Dresden (*Arch. f. Ophth.*, Vol. LXXIII, part 3). It is possible by means of an arc light to produce in the lens vivid fluorescence which can be seen a considerable distance away. The irritation of the retina in the observed eye must consequently be still more intense. This fluorescence, too, impairs the sharpness of the retinal image.

The rays which cause fluorescence of the ocular media are contained in daylight and are particularly active when looking towards the sun at objects near the horizon, the sun being about 30° above the horizon. The objects then appear veiled. Shading the eyes improves vision, the diffused daylight containing fewer rays of short-wave length, without the ability to produce fluorescence. A euphos glass is still more effective in removing these rays.

The best protective glass is one which absorbs the fluorescence producing rays as completely as possible without, however, seriously affecting the visible rays.

In the petroleum light are found only rays which produce fluorescence of the ocular media. Welsbach, incandescent and arc lights, especially the latter, in addition, contain ultra-violet rays, which irritate the external eye.

To protect the eyes against petroleum light it is only necessary to avoid allowing the light to fall directly into the pupil. With the other artificial lights, even though no direct light enters the eye, it is necessary to remove the irritating rays of shortest wave length, which is best accomplished by glass shades made of euphos glass. These are so prepared as to just bring about a disappearance of the fluorescence produced in the lens by an arc light of 10 amp. several meters distant.

A. C. S.

### The Condition of the Pupils in the New-born and During the First Year of Life.

GUDDEN, H., Munich (*Muench. med. Woch.*, February 22, 1910). Gudden found the pupils of the new-born during sleep much less contracted than those of adults, averaging 2.2—2.5 mm. The dilatation on awakening was extremely slow and did not average more than 3—3.5 mm. Only if the infants were shaken or slapped on the back was dilatation more prompt and slightly more marked. After about the third month the pupils during sleep were already found more contracted, and during the sixth and seventh months a miosis less than 1.5 mm. prevailed. The lightning-like maximal dilatation on awakening was of more gradual development, and even at the end of the first year was not nearly so pronounced as in adults.

V. Sicherer examined 400 new-born infants with the electric ophthalmoscope and found the pupils during sleep only slightly contracted. He considered it an advantage to find the infant sleeping, considerably facilitating ophthalmoscopical examination.

Various theories have been advanced to explain the pupillary miosis during sleep, and the author briefly refers to these. He considers the reason why the pupils in the new-born during sleep are not strongly contracted undoubtedly attributable to the incomplete development of the medullary sheaths of the second and third nerves, also accounting for the connection between the optic and third nerve centers being functionally insufficient. Since miosis during sleep is not well defined until the third or fourth month (at a time when the medullary development in the region of the brain stem is nearly or quite completed, whereas in extensive portions of the brain cortex, the development of the medullary sheaths and of the ganglion cells is only just beginning), it can perhaps only be ascribed to a stimulus or tonus of the inferior branches of the oculomotor nerve, viz., in the region of the third nerve nucleus.

The sudden dilatation of the pupils ad maximum on awakening, he considers a cerebral cortical reflex developing later with other psychical reflexes. To support this assertion, based on embryo-anatomical reasons, it would be advantageous to test the condition of the pupils on awakening in pathological cases (certain forms of idiocy and dementia præcox).

A. C. S.

### Concerning the Question of the Relation of Blood Pressure to Glaucomatous Increase of Tension.

Kraemer, R., Vienna (*Archiv. f. Ophth.*, Vol. LXXIII, Heft 2, 1910). The writer was instigated to make investigations along these lines because of the publication of an article by Fraenkel (Recherches sur la tension arterielle dans le Glaucome, *Arch. d'Ophtalm.*, T. XXV, 1905). Fraenkel examined 15 cases of glaucoma and found arterial pressure above normal in 14. while the average pressure in the control cases proved to be lower than in the glaucomatous cases. The marked difference in the results obtained by Terson and Campos, 1898, and by Bajardi, 1900, suggests the improbability of a direct or even indirect connection between the state of the blood pressure and glaucomatous tension.

That high blood pressure can directly result in a pathological increase of intraocular tension is entirely at variance with clinical experience; Kraemer therefore limits himself exclusively to a possible indirect relation—the effect of high blood pressure on eyes predisposed to glaucoma. (The influence of miotics disproves the supposition that increased blood pressure in acute glaucoma may retard the return to normal conditions.)

If it be assumed that an increase of blood pressure increases this predisposition, glaucomatous patients should average a higher blood pressure than other patients, or high blood pressure should on the average be associated with increased intraocular tension.

Kraemer accordingly examined 45 cases of glaucoma. In 22 (44.9%) the blood pressure was normal; in 7 (15.5%) subnormal, and in 16 (35.6%) above normal. In 7 of the latter there was only a slight increase (up to 130), in 9 a higher pressure being recorded. In 4 the increase was undoubtedly of nervous origin; in 9 an abnormally frequent pulse rate associated itself with increase of blood pressure. There was no marked difference in blood pressure between the cases of acute and chronic glaucoma.

Arteriosclerosis was noted in 6 patients; one of these registered a blood pressure of only 55 (cardiac insufficiency). He concludes that in glaucoma the blood pressure is often found above normal, this increase in the majority of cases, however, being dependent upon somatic and nervous conditions; on the other hand, observations of abnormally low pressure, of sudden reduction of pressure, argue strongly against a direct connection between blood pressure and glaucoma.

Control measurements in 90 cataract cases showed a blood pressure above 115 in 30 (33%), about the same percentage as noted in the cases of glaucoma. A subnormal pressure was recorded in 16 cases.

Simultaneous blood pressure (Gärtner) and tonometric examinations using the Schiötz new tonometer were also made in cases of nephritis, arteriosclerosis and cardiac disease, 14 patients being examined in all. Though blood pressure was increased in every case (in a few above 180), the intra-ocular tension in every instance was found to be absolutely normal.

The negative conclusions to which these investigations have led emphasize the uselessness of attempting to influence glaucoma by dietetic means. While such may be needed to improve the patient's general condition, the treatment for the present must resolve itself into the local medicinal and operative forms of treatment.

The occurrence of arterial pulsation in eyes, with only a moderate increase of tension, may perhaps be attributed to a marked difference between the systolic and diastolic pressure.

In conclusion, he briefly refers to the so-called vascular crises (Gefässkrisen), discussed at length in an article by Pal. In these cases there occurs a quick, almost sudden rise of blood pressure, followed by a return to normal. If a simultaneous rise of intra-ocular tension should occur, paroxysms would present themselves, resembling true glaucoma in their periodicity. Pal mentions such cases. Kraemer himself has seen one case. Nevertheless, he considers the cases too few to enable any positive conclusions to be drawn. Perhaps a subdivision of glaucoma, designated vascular glaucoma, will have to be made, or, after all, these may prove to be only cases of secondary glaucoma. A. C. S.

### Experimental Investigations as to the Significance of the "Leucines" in the Cure of Infectious Conjunctival Inflammations.

SCHNEIDER, R. (*Arch. f. Ophth.*, Vol. LXXIII, Heft 2, 1910). The article is a comprehensive one, and it will be possible only to cite the author's conclusions, which are as follows:

1. The normal secretion of the lacrimal gland and of the conjunctiva does not contain any bactericidal, hemolytic or opsonizing substances.

2. After instillation of silver nitrate, protargol or zinc sulphate solution, leucocytes wander into the conjunctival sac, and under the influence of these medicaments give off bactericidal substances—the leucines.

3. The curative effect of the astringents is not dependent so much upon the eschar or membrane which is produced or upon their antiseptic properties as upon their ability to effect leucine formation.

4. The destruction of the infectious agents in the conjunctival secretion occurs chiefly extracellular, owing to the contained leucines, and not because of alexin, which is ineffectual against most excitants of conjunctivitis, and after the application of silver or zinc salts only leaves the blood in small quantities.

5. Although the production of leucines in the conjunctival secretion is the principal factor upon which is founded the curative action of the silver nitrate or zinc sulphate salts, it is quite possible that other favorable influences of unknown nature are provoked.

6. The fact that the increasing of resistance locally and the curative action of the astringents principally manifests itself in the eye by the formation of leucines indicates that leucin may rightly be considered in a class with blood alexin and phagocytosis, the chief weapons of the natural resistance.

7. In the therapy of infectious conjunctival inflammations, therefore, a copious production of leucines is indicated to combat the infectious excitants. A. C. S.

### Concerning the Conditions of Immunity in the Anterior Chamber.

Miyashita, Tokio-Freiburg (*Klin. Monatsbl. f. Augenheilk.*, Beilageheft, 1910), in a measure confirms Romer's law of cytoxin retention through the excretory apparatus of the eye. The paper is technical and does not admit of satisfactory abstracting. W. Z.

### Contribution to the Value of Serum Diagnosis of Syphilis in Diseases of the Eye.

Hessberg, Essen (*Klin. Monatsbl. f. Augenheilk.*, Beilageheft, 1910). These tests with the Wassermann-Neisser-Bruck reaction were made in a series of cases of disease of the cornea, iris, chorioid, retina, optic nerve and in diseases of the nervous system especially liable to ocular complications (tabes, multiple sclerosis, etc.), and in diseases of the brain, and led the author to the following conclusions: 1. The positive reaction is ophthalmologically in clinically surely specific or suspiciously specific cases proof of the presence of a specific disease of the eye. This applies as well to hereditary as to acquired syphilis. 2. It is qualified in clinically obscure cases without a history of syphilis or general symptoms to support a syphilitic view of the ocular condition. 3. A negative reaction is no positive proof of the absence of a syphilitic ocular condition, especially if other clinical or anamnesic data point towards it. If such are wanting, then the negative result in its relation to the differential diagnosis calls for a consideration of other etiological factors and the employment of other methods of elucidation (tuberculin reaction, etc.). W. Z.

### A Method of Injecting the Vascular System of Rabbits' Eyes.

Ulbrich, Prag (*Klin. Monatsbl. f. Augenheilk.,* February, 1910), details a method which he employed in experimenting to determine whether it was possible to produce local disease of the eye by injecting into the circulation, blood containing trypanosoma. The description is too lengthy to publish in full and is of no value in abstract. W. Z.

### An Electrically Illuminated Apparatus for the Determination of the Binocular Field of Vision.

Wolfflin, Basel (*Klin. Monatsbl. f. Augenheilk.*, February, 1910). This consists in a small incandescent lamp inclosed in a black metallic hood for fixation and a second similar lamp inclosed in a hard rubber case with a curved handle and a flange to engage in the arm of the perimeter. The apparatus can be temporarily attached to any perimeter. W. Z.

### Concerning Injury to the Eyes by Ultraviolet and by Light Rays.

Best, Dresden (*Klin. Monatsbl. f. Augenheilk.*, March, 1910), reviews the various current theories concerning the action of chemic and light rays upon the eyes. He holds that all known facts show that the damage results from their intensity. Rays visible and invisible enter the eyes in moderate amounts year in and year out without resulting damage. It is a mistake to speak of ultraviolet rays as pathogenic. He is led to the conclusion that it is unnecessary to protect the eyes against the ultraviolet portion of artificial illuminants so long as they do not surpass in brightness those of daylight.

W. Z.

### Argyrosis as a Trade Affection.

Hirschberg, J. (*Centbl. f. prakt. Augenheilk.*, 1909) reports a case of silver staining of conjunctiva, plica, and sclera in a silver polisher, fifty-nine years of age, who had been polishing newly plated silverware on a lathe for twenty-nine years. The patient's hair was colored yellowish red in front (originally dark blonde), and the skin of the lids and face was gray.

M. W.

### Clinical and Bacteriological Studies of the Conjunctival and Lacrimal Sac Inflammations and Several Cases of Panophthalmitis.

Kuffler, Otto, Giessen (*Zeitschrift f. Augenheilk.*, November, 1909, Band XXII, Heft 5). In bacteriologic examination of 727 cases of conjunctivitis, Kuffler found diplobacilli present in 42 per cent.

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|---|---|
| Diplobacilli and pneumococci | in 4 per cent |
| Pneumococci | in 8 per cent |
| Xerosis bacillus | in 6 per cent |
| Staphylococci | in 2 per cent |
| Gonococci | in 1 per cent |
| Diphtheria | in 1 per cent |
| Negative | in 36 per cent |

Clinically, the negative cases occurred in: 1. Simple acute conjunctivitis, due to some unknown organism. 2. Chronic conjunctivitis, due to chemical, thermal or mechanical irritation. 3. Follicar catarrh, which is always negative.

In 40 cases of disease of the lacrimal sac, the bacteriologic findings were:

| | |
|---|---|
| Pneumococci | in 17 cases |
| Pneumococci and staphylococci | in 3 cases |
| Pneumococci and influenza | in 10 cases |
| Pneumococci and xerosis | in 1 case |
| Streptococci | in 5 cases |

Koch-Weeks, diplobacillus, subtilis and Friedlander bacilli, each one case.

In three cases of panophthalmitis the bacillus subtilis was found twice in pure culture, and once in association with pneumococci. In every case the subtilis infection was very acute, the panophthalmitis reaching its height in 14, 18 and 48 hours, respectively. F. K.

### Blepharitis and Conjunctivitis by Poisoning from Origanum Majorana, L.

Hilbert, R. (*Woch. f. Ther. und Hyg. d. Aug.*, February 11, 1909), reports a case of poisoning in a young gardener from majoran. Shortly after handling the weed he noticed a prickling and itching of the skin of hands and face. The fingers and lids became red and swollen, and the eyes began to emit a watery mucous discharge. Under use of cold applications and lanoline the inflammation had entirely disappeared within five days. In order to prove the etiology, Hilbert rubbed a piece of the drug on the index finger of the left hand, which soon became red and swollen. M. W.

### On the Etiology and Nature of Trachoma.

MUTERMILCH, J., Warsaw (*Arch. f. Ophth.*, Vol. LXXIII, No. 2), ends his article with the following deductions:

1. Trachoma should not be considered a separate disease, but an expression of a general pathological process.
2. Trachoma belongs to the class of typical, so-called chronic inflammations of the mucous membanes, which occur so frequently.
3. The nature of trachoma is founded on the consequent tendency of the conjunctival tissue (epithelial and subepithelial connective tissue) towards regaining in an anatomically different form the relation of equilibrium which has been disturbed.
4. The follicle and pannus represent only associating symptoms of trachoma and have absolutely no significance in regard to the etiology, course and termination of the disease.
5. Various kinds of bacteria which are able to produce acute inflammations (Koch-Weeks, diplobacillus, influenza bacillus, etc.) have a distinct significance in relation to the etiology of trachoma. Individual predisposition, climate, race and age of the patient are entirely of secondary importance.
6. The trachomatous patient is dangerous to his environment only through the contagiousness of acute inflammations of the conjunctiva, which, depending wholly on hygienic conditions, either quickly subside without leaving a trace or merge into a chronic condition.
7. Trachoma can only be controlled by dissemination of information and improvement of the general welfare.

A. C. S.

### An Improved Method of Staining Trachoma Bodies.

GALLENGA, Parma (*Klin. Monatsbl. f. Augenheilk.*, February, 1910), has used the eosinmethylblue of Leishman and the eosinmethylblue of May-Grünwald for staining trachoma bodies. The first seems to be especially satisfactory for smear preparations and the latter for thin sections. They are used in the proportions of 1/3 to 2/3 of distilled water. Staining is continued for 10-15 minutes. The preparation is then freely washed with distilled water and the "smears" are after drying quickly transferred to xylol and fixed in Canada balsam. The sections are after staining and washing, transferred to first 50% and then 98% alcohol and conserved in cedar oil.

W. Z.

### A Contribution in Trachoma Research.

Wolfrum, Leipzig (*Klin. Monatsbl. f. Augenheilk.*, Beilageheft, 1910). This contribution has to do with a study of the trachoma bodies in sections. The author first describes changes found in the epithelium. In the normal epithelium there is a complete unbroken layer of flattened epithelial cells, which to a more or less degree show horny change. This is absent over large surfaces in trachoma, there being in place irregular areas of cuboidal cells, and the characteristic intercellular spaces are in places absent, and there is a separation of the cells. These changes are more pronounced in affections with virulent secretion. In the earliest stage of the development of the bodies the granule was divided into three parts; it was surrounded by a fine space which separated it from the surrounding protoplasm; an important point in its recognition and in the proof that it is not a product of cell degeneration. The next two phases follow close upon one another, and it is difficult to understand whether they represent several granules in close relation or whether it is one granule undergoing division. In the next stage it is often found that the individual forms are connected by fine threads. Under certain conditions there is a wide variability in the size of the initial granule. In the next stage the granules are found arranged in a circle which, however, really represents a sphere, as could be demonstrated by fine adjustment. The space was no longer empty, but occupied by a larger or smaller number of granules, which differed in size and staining from those seen in the periphery at the early stage. They were red and smaller. These were found principally in the midst of the collection. But they may be interspersed, and this is probably due to mechanical causes, such as the pressure exerted in excising the tissue. A progressive increase of the peripheral bodies with an enlargement of the small red elements is accompanied by an enlargement of the entire collection. In all stages the collection of granules is surrounded by a clear area, which sharply differentiates them from the surrounding protoplasm. The peripheral granules are sometimes separated from the surrounding protoplasm by a narrow space, or they jut out into the surrounding protoplasm. In the marginal granules, particularly, are found connecting blue masses or fibers. The author has found the marginal large bodies easily discernible at all stages of the process. He wishes to modify his previous statement that the complete destruction of the cell is seen only just beneath the surface. In eight cases of catarrh of the new-born without gonococci, in four the inclusions were positive. They were numerous in smear preparation and resembled in every way those in trachoma of the adult. This leads to the conclusion that the bodies are not pathognomonic and are a product of cell destruction, or that if they are pathogenic we have trachoma of the new-born differing entirely from that of the adult; and he is of the opinion that it is highly likely that they are the cause of trachoma. In the above cases the periods of incubation from the time of birth were 7, 9, and 11 days. In none was a pathogenic microorganism found. In two instances the maternal vagina was examined for the bodies without result. The investigations, however, were undertaken late. It is likely that the infection took place at the time of birth, from contact of the birth secretions with the conjunctiva. W. Z.

### Studies in the Pathology of Pemphigus of the Conjunctiva.

ADAM, C., Berlin (*Zeitschrift f. Augenheilkunde,* January, 1910, Band XXIII, Heft 1). The author reports the case of a 57-year-old woman, who had frequent attacks of pemphigus, also affecting the eye, causing much scar tissue and deformity to appear. A plastic operation was performed. One year later she died of perforation of the esophagus. Adam secured the operated eye with the accompanying lids. The conclusions reached by him after the pathological examinations were as follows:

Pemphigus of the eye is undoubtedly associated with general pemphigus, but runs a different course on account of the peculiar condition present in the eye. The characteristic change in the eye is not the formation of a vesicle (which is, in fact, but seldom seen), but rather an inflammation of the subepithelial and adenoid layers (tunica propria) of the conjunctiva, with formation of scar tissue. In the latter are found many small nodes, showing the nodular character of the disease.

The contraction of the conjunctival sac is, therefore, not due to adhesions between the areas of denudation caused by the vesicles, but to the change of the epithelial infiltration into the scar tissue.

The vertical fold formation described by von Michel as characteristic of beginning pemphigus is due to the fixation of a circumscribed point in the scleral conjunctiva by means of the cicatricial change in one of the small nodes. Because of the tension of the lid the conjunctiva is immobile at this place, and this causes the appearance of the fold.

The cornea is affected by the loss of the epithelial layers and by its irregular regeneration; the epithelial layers being replaced either by the epithelial layers of the cornea or from the neighboring conjunctiva; in the latter case resulting in a pterygium.

The results of pemphigus disease are found not only on the visible portions of the bulb, but extend to the equator in the form of a chronic inflammation, possibly due to the absorption of toxines.

In the operation of transplantation for the formation of a new conjunctival cul-de-sac, care must be taken not to cut through the tarsus, thus opening the orbit, as the resulting conditions are much worse than the original lesion. If the transplantation is attempted, the incision should be made as near the bulbus as possible. It is a question, however, if transplantation is ever successful.

The mucous membrane taken from the mouth always preserves its native characteristics. In its growth it frequently extends over the corneal surface. F. K.

### Gangrene of the Conjunctiva.

Schaltz, Budapest (*Klin. Monatsbl. f. Augenheilk.*, January, 1910). The patient, a man of 36 years of age, had had the left eye destroyed by an explosion ten years previously. It had been treated tentatively. There was now a hard dark body, surrounded by a crumbling, fatty mass of foul odor. The dark mass proved to be the head of a wire nail, which had been driven through the eyeball and was embedded by its end in the orbital wall. Examination of the gangrenous mass showed the presence of staphylococci, streptococci, pneumococci, a gram negative bacillus resembling the colon bacillus, spirochaeta and a spindle-formed gram negative bacillus. The fourth and fifth of the above organisms, together with the simultaneous presence of a spindle-formed one, makes it clear that we have here the same organisms as found in gangrene of other parts of the body. W. Z.

### Traumatic Cysts of the Conjunctiva.

Carlini, V., Livorno (*Arch. f. Ophth.*, Band LXXIII, Heft 2, 1910), reports the history of a case of cyst of the bulbar conjunctiva in a 38-year-old woman who had been struck in the eye with the branch of a tree 15 years previously. Following the injury, the eye remained red several days, and subsequently there developed at the site of the injury a reddish swelling, which steadily increased in size for several months afterwards, when no further growth was noticeable. Although no subjective symptoms were present, the patient thought that during the past weeks an increase of size had occurred.

Examination showed at the nasal limbus, exactly in the horizontal meridian, a vesicular, rose-colored, semi-transparent swelling (4x5x3 mm.), which was immovable, under the conjunctiva. It was only possible to excise the anterior wall of the cyst with the overlying conjunctiva. Microscopical examination revealed externally the normal epithelium of the bulbar conjunctiva, covering a layer of loose connective tissue, beneath which the wall of the cyst was discernible, consisting of an external connective tissue layer and an internal layer of typical stratified, pavement epithelium. Near the cyst wall were epithelial clusters, the cells being well formed and exhibiting neither progressive nor regressive characteristics. No lumen was demonstrable.

*Diagnosis.*—Epithelial serous cyst of the bulbar conjunctiva.

While superficial examination of the epithelial clusters suggested a resemblance to transverse sections of gland tubules, further study of the histological characteristics and the absence of a previous history of a pathological conjunctival process argued against a possible origin from an accidental or pathological gland in the bulbar conjunctiva.

He concludes that:

Although few cases have so far been published, the formation of true epithelial cysts of traumatic origin may undoubtedly occur in the conjunctiva. These cysts may arise from:

(a.) Direct implantation of epithelial elements, which have been detached and driven under the conjunctiva by the traumatism (Uhthoff's and Mayou's observations).

(b.) Direct proliferation of the conjunctival epithelium into the subepithelial tissue, owing to a disturbance of cicatrization. Epithelial plugs thus are formed which after cicatrization of the conjunctival wound become independent of the surface epithelium, resulting in isolated epithelial clusters, from which it is possible for a cystic new formation to develop. A. C. S.

### Herpes Corneæ Menstrualis.

Rönne, Copenhagen (*Klin. Monatsbl. f. Augenheilk.*, March, 1910), reports a case of herpes of the cornea recurring at the menstrual period in a woman 42 years of age. Her four last menstrual periods had been scant and had lasted but one day. Regularly on the fifth day after cessation of the flow the right eye had become painful, accompanied by photophobia. This lasted from two to seven days. There was ciliary injection and the epithelium over the entire corneal surface was irregular, due, as demonstrated by the corneal microscope, to countless minute bullæ, about 1/5 mm. in diameter. W. Z.

### Concerning Ring Abscess of the Cornea.

Tertsch, R., Vienna (*Arch. f. Ophth.*, LXXIII Band, Heft 2, 1910), reports the histories and bacterio-histological findings in five cases of typical ring abscess of the cornea, in one case of melanosarcoma of the chorioid, with ring abscess, and in one case of serpent ulcer, with pronounced infiltration ring.

He concludes that:

1. The histological picture of ring abscess which Fuchs has described—the primary necrosis of the posterior corneal lamellæ, with secondary immigration ring, is only a symptom of a grave pathological disturbance (usually purulent inflammation) of the interior of the eye, which not only leads to

necrosis of the internal ocular coats, but also affects the inner surface of the most external tunics of the eye, the cornea and occasionally the sclera.

2. This necrosis or purulent inflammation may be caused by various poisons; not only by bacterial toxins, but by toxins resulting from degenerated neoplasms. (In the five uncomplicated cases bacillus subtilis was found twice, pneumococcus lanceolatus, streptococcus pathogenes longus and bacillus pyocyaneus each once.)

3. The clinical picture of ring infiltrate is not always associated with the histological picture of ring abscess. In man, and particularly in animals, also in cases of serpent ulcer, the development of a marked ring-shaped zone of infiltration, resembling the clinical picture of ring abscess, may occur. Serpent ulcer must, however, be differentiated from ring abscess. While in serpent ulcer the destruction of tissue occurs from before backwards, in ring abscess the destructive process takes place in the opposite direction. Serpent ulcer being a primary, isolated (at least during the incipient stages) disease of the cornea, preservation of sight and shape of the globe is possible, whereas ring abscess, representing part of a serious, invariably destructive disease of the whole eye, always leads to loss of the eye.

4. For the clinical diagnosis of ring abscess the presence of a ring infiltrate is, therefore, not alone necessary; there must be associated signs of a grave, pathological disturbance (inflammation, tumor) of the interior of the eye. A. C. S.

### Further Contribution to the Pathologic Anatomy of Marginal Degeneration of the Cornea.

Seefelder, Leipzig (*Klin. Monatsbl. f. Augenheilk.*, March, 1910). The examined eye was removed because of sympathetic ophthalmia following cataract extraction in a man 76 years of age. The clinical history showed that there had been a broad arcus senilus with a beginning furrow formation. The other eye presented an almost completely annular furrow centralwards from which could be seen the remains of the arcus senilus. The gutter was shallow, the corneal tissue clear but traversed by numerous blood vessels. Anatomically there was in the enucleated eye no actual furrow present, but in this position the conjunctiva entirely covered this area. In connection with the superficial epithelium of the conjunctiva at the central border of the furrow there was a wedge of epithelium extending into the furrow. The periphery of this wedge showed partly basal cells of the cornea and partly basal cells of the conjunctiva. Bowman's membrane and the superficial layers of the substantia propria were changed into a loose fibrillary, richly nucleated tissue. A part of the corneal lamellæ at the position of the furrow suddenly and abruptly ended. Other portions were vascular. Evidences of inflammation were entirely absent in the furrow tissue. The conjunctival vessels were normal. Within the furrow no fat reaction was obtained, but the ends of the corneal lamellæ forming the floor of the furrow were diffused with fat granules, which were within the lamellæ, but not in the interstitial tissue. W. Z.

### On the Etiology of Serpent Ulcer.

Jensen, Edmund, Copenhagen (*Arch. f. Ophth.,* Vol. LXXIII, Part 3). The author believes that the infection in serpent ulcer does not occur simultaneously with the initial traumatism, but that a relapsing bulbous keratitis intervenes. Rupture of the bleb favors infection, especailly if a dacryocystitis or chronic conjunctivitis coexists. The ring-shaped character of the infiltrate with the convexity directed outwards is the result of a primary subepithelial infiltrate at the former bleb margin.

In the treatment of serpent ulcer it is important, therefore, to remove the loosely adherent epithelium as early as possible and to cauterize (tr. iodine) the base of the ulcer.

Jensen fails to see how a corneal erosion could result in a ring-shaped infiltrate, as Fuchs has intimated, nor does he believe a lesion of Bowman's membrane necessary in the production of serpent ulcer. He also considers it a mistake to compare the early stages of serpent ulcer with those of an inoculation keratitis as Fuchs has done, the infection in serpent ulcer *succeeding* the epithelial lesion. Moreover, since the cases which Fuchs has enumerated as representing the initial stages of the disease were not permitted to reach maturity, the diagnosis is open to question. In a few cases, which Fuchs considered exceptions to the rule, the early signs, however, being analogous to what Jensen considers to be the usual appearance at this stage—an incomplete ring of rather large diameter—a bleb was demonstrable. Jensen believes the pocket formed by the bleb just as capable of retaining microorganisms as the small pocket wound produced by a lesion of Bowman's membrane. A. C. S.

### Contributions to the Histogenesis and Histology of the Retina, Pigment-epithelium and Optic Nerve.

SEEFELDER, R., Leipzig (*Arch. f. Ophthal.*, Vol. LXXIII, Part 3). This article does not lend itself to abstraction.

A. C. S.

### Bilateral Keratitis Parenchymatosa Due to Lues Following a Unilateral Traumatism.

ASMUS, Dusseldorf (*Zeitschrift f. Augenheilkunde,* October, 1909, Band XXII, Heft 4). The possible production of keratitis parenchymatosa by traumatism, with the extension of the keratitis to the fellow eye, has not only a theoretical, but also a practical bearing from the point of casualty insurance.

The author reports the case of a 16-year-old apprentice, who was struck in the left eye by a piece of emery, following which an ulcer formed in the cornea at the site of the wound. Two days after the formation of the depressed ulcer, or thirteen days after the accident, unmistakable interstitial keratitis presented itself. Less than six weeks later the fellow eye was similarly affected.

A brother of the patient had had an attack of interstitial keratitis and was afflicted with saddle nose and Hutchinson teeth. The father had had a severe attack of syphilis at one time. F. K.

### Keratitis Parenchymatosa Annularis.

GILBERT, Munich (*Klin. Monatsbl. f. Augenheilk.,* April, 1910), states that in 66 cases of parenchymatous keratitis which were followed from beginning to end of the disease, keratitis annularis occurred 14 times. This relatively large number is accounted for by the fact that only cases of known constitution specific origin were taken. With the exception of 5 cases, the annular inflammation of the cornea was a passing phase in the course of parenchymatous keratitis, which in no way differed from the usual diffuse parenchymatous keratitis. The infiltrate took its annular form usually towards the end of the third and during the course of the fourth week. It was at its height during the fifth week. At the end of from eight to twelve weeks all trace of the annular formation had disappeared, and the affection again resembled in every way diffuse keratitis. As complications were noted filamentous formations, perforation and recurrence of the annular type. Frequently there remained a central opacity just as in diffuse keratitis. While syphilis, both inherited and acquired, plays the principal role, still the same character occurs in tuberculous parenchymatous keratitis. Sometimes there is only a semicircular opacity, at other times a ring opacity surrounding a central area of caseation. Sometimes the keratitis is primarily ring shaped. Histologically it has been shown that the characteristic appearance is due to the gradual coalescence of multiple infiltrates at an equal distance from the margin of the cornea. That the opacity is located not at the outermost zone of the cornea, but from 1.5 mm. to 2 mm. from the limbus is due to anatomical relations. Similar location occurs in arcus senilis and in leucoma as well as in infiltration with blood. W. Z.

### Total Suppuration of the Cornea Following Strabismus Operation.

Wirtz, R., Stuttgart *(Zeitschrift f. Augenheilkunde,* January, 1910, Band XXIII, Heft 1). The operation consisted of tenotomy of the internus and advancement of the externus in a patient just recovered from an attack of angina, which had lasted three weeks.

Within three days after the operation, acute suppuration had occurred, with purulent infiltration of the cornea. The result was phthisis bulbi. The bacteriologic cause was the streptococcus longus, migrating from the throat or carried by the patient to the eye by the hands. The throat secretion showed a pure culture of the same microorganism. F. K.

### Annular Opacity of the Anterior Capsule of the Lens Produced by Shot Wound of the Orbit.

Steiner, Surabaga *(Klin. Monatsbl. f. Augenheilk.,* January, 1910), examined the patient two weeks after the injury. There was slight proptosis, globe practically immobile, pupil dilated ad maximum, invisible above, retinal hemorrhages, vessels very narrow. On the anterior capsule there was an annular punctiform opacity the diameter of a small pupil. As the bullet entered the orbit and had injured the nerve just posterior to the ball, which it had forcibly contused, only a momentary increase of intraocular tension could have occurred.

Of the two views—that of dimpling of the cornea, pressing the iris upon the anterior capsule, and that of sudden increase of pressure of the aqueous humor, pressing the iris against the capsule—the author thinks that this case supports the second, the increased pressure of the aqueous being here produced, however, by sudden driving forward of the lens. W. Z.

### Spontaneous Disappearance of Cataractous Striae.

Becker, Franz (*Woch. f. Ther. und Hyg. des Aug.*, January 13, 1910), puts the question as to whether spontaneous disappearance of incipient senile cataract occurs, and quotes Jäger in the affirmative. He reports a case of marked striae in the lens of a patient and friend of his, 60 years of age, in whom, two years later, he was unable to demonstrate any opacity. Aside from prescribing proper glasses, no treatment was given. M. W.

### On the Etiology of Glass-Blowers' Cataract.

Schanz and Stockhausen, Dresden (*Arch. f. Ophth.*, Vol. LXXIII, Part 3). The authors made a series of tests in a glass-blowers' workshop with a spectrograph, universal photometer and pyrometer.

They arrived at the conclusion that the peculiarities of glass-blowers' cataract must be ascribed to the action of the light rays of short-wave length, which emanate from the glass oven. The ultra-violet rays of shortest wave length (less than 320 mm.), which cause irritation of the external eye, are absent, thus enabling the glass-blower to continue at his work without discomfort.

The iris, which is a good conductor of heat rays, absorbs, because of its contained pigment, light rays of short wave length particularly well. The action on the lens, therefore, limits itself to the pupillary lenticular portion.

The writers also believe that evidence is increasing in favor of attributing senile cataract to the influence of light rays of short wave length. The article contains a photographic copy of the interior of a workshop with the instruments in position, also reproduction of the spectroscopic findings.

A. C. S.

### Cataract Formation After Electric Shock.

Komoto, Tokio (*Klin. Monatsbl. f. Augenheilk.*, February, 1910), reports two cases of lenticular opacification following electric shock. In the first case, seen in a man 48 years of age, the current was received by direct contact with the cornea through a charged copper wire. He was unconscious for 20 minutes. There was a history of inflammation having at once developed in the eye, but the examination which revealed the lenticular opacity was not made until five months later. There was a faint nebule in the upper-outer quadrant of the cornea. In a corresponding position in the anterior capsule there was a chalky white opacity, and radiating therefrom several punctate striae. V. = 6/60.

In the second case the current passed from the left hand to the forehead. The patient, a man 28 years of age, was rendered unconscious for several hours. Vision began to fail in the left eye six months, and in the right eye, ten months later. Examination showed in the left eye a complete cataract and in the right eye a cataract punctata. The opacities in the right lens were in the anterior cortex. The equatorial region was but little involved. The right lens was removed in its capsule. Microscopic examination showed that the epithelial cells were in places without nuclei, and there were small slit-like openings between the epithelial cells. The changes were those seen in the capsule after ordinary cataract extraction, only, as was to be expected from the clinical appearances, less extensive. In the completely opaque lens there were small round or oval or irregular spaces, some of which were filled with a peculiar substance which took the stain very faintly. These were most numerous in the anterior cortex. The voltage in each case was 11,000. W. Z.

### The Visual Fields in Hereditary Optic Nerve Atrophy.

Rönne, Copenhagen (*Klin. Monatsbl. f. Augenheilk.*, March, 1910), records two cases of this affection presenting peculiarities in the fields of vision, which are not without significance in the understanding of the pathogenesis of the affection. Both showed to a fairly marked degree a radial horizontal limitation of the nasal field corresponding to the projection of the raphe of the retinal nerve fibers. In these cases it is impossible to accurately find this boundary, because of the absence of central fixation. The author explains this limitation by assuming that the nerve fibers are affected in bundles within the optic nerve, as a rule limited to the papillo-macular bundle, but accidentally, as it were, by a displacement of the focal lesion, affecting also a bundle of peripheral fibers.

W. Z.

### Retinal Hemorrhages.

HESSE, F. (*Deutsch. med. Woch.*, 1909; Abstr. *Woch. f. Ther. und Hyg. d. Aug.*, September 9, 1909), calls attention to the difficulty in differentiating between pernicious anemia and severe secondary anemia. In examining a great number of cases he has noticed retinal hemorrhages in the pernicious form and not in the secondary form. He concludes that an examination of the fundus showing retinal hemorrhages indicates pernicious anemia, and that in the absence of such hemorrhages one must look for some malignant tumor, such as intestinal carcinoma. M. W.

### Sympathetic Amblyopia.

FEJER, J., Budapest (*Centralbl. f. prakt. Aug.*, August, 1909), reports the cure of a case of sympathetic amblyopia. A young woman, 28 years of age, had lost her eye from smallpox when 18 months old, but no pock marks could be seen on the face. She complained of severe pain in the right eye for the past two weeks, headaches and greatly diminished vision of the left eye. The right eye was shrunken and calcareous, with red and chemotic conjunctiva and painful to the touch. The left eye was apparently normal in every way, but central vision sunken to 1/70th, field of vision concentrically contracted. The following day, after enucleation, she claimed to be much better. On the fifth day vision was 7/5ths, field of vision normal, and within two weeks the patient was well. M. W.

### So-Called Retinitis Punctata Albescens.

LAUBER, Vienna (*Klin. Monatsbl. f. Augenheilk.*, February, 1910), reports an instance of this affection. In a family of six children there were four affected, two males and two females. The maternal grandmother and grandfather were cousins. Central vision in all of the cases was but little affected. In two the fields of vision were normal, in one the only alteration was that blue was more contracted than red, and in one there was a slight contraction. By reduced illumination the fields were in two cases contracted to within 30% of fixation; and in two it was impossible to determine. In three the color sense was probably normal; in one there was an abnormal trichromatopsia. The fundus changes were similar in all. Papilla and vessels normal. No pigment anomaly of the fundus. The entire eye ground beset with small white dots. The macular region normal.

From an analysis of his own and the heretofore reported cases he concludes that: Cases of so-called retinitis punctata albescens may be divided into two groups. 1. Include cases of congenital stationary anomaly, in which there are white dots in the fundus, with otherwise normal findings. Aside from a high grade of hemeralopia there are no functional disturbances. ("Fundus albipunctatus cum hemeralopia congenita.") 2. Include cases of congenital progressive disease. Besides the dots there are pigment derangement and heapings, atrophic areas in the chorioid, retinitic optic atrophy with contraction of the blood vessels. These phenomena are of varying intensity. Besides hemeralopia there may be reduction of central vision, contraction of the field of vision and disturbance of the light sense. ("Retinitis punctata albescens.") In both groups the hereditary tendency and consanguinity are prominent. W. Z.

### Optic Atrophy Following Congestive Hemorrhage (Stauungsblutungen)—A Contribution to the Origin of Pathological Excavations.

RÖNNE, Copenhagen (*Klin. Monatsbl. f. Augenheilk.*, January, 1910), records an instance of "Stauungsblutungen," a condition first described by Braun. The patient, a man of 54 years of age, was caught between the elevator floor and the shaft door, at the level of the ensiform cartilage. All of the skin surface above this line was discolored and contained scattered petechia. There was a uniform swelling of the soft parts of the head and neck, especially of the eyelids, extensive subconjunctival hemorrhage and slight exophthalmos. There were also buccal submucous hemorrhages. On the first day the fundus was normal. On the second day vision of O. S. became cloudy, and in five days the eye was blind. The ophthalmoscope showed in both eyes normal conditions, but on the eighth day there was a striated hemorrhage of the disk.

Later atrophy of the left optic papilla set in and the physiological excavation took on a glaucomatous type, having a depth of 3 D. at its upper border. W. Z.

### A Case of Transient Quinine Amblyopia.

STASINSKI, Posen (*Klin. Monatsbl. f. Augenheilk.*, February, 1910). The patient, a man 60 years of age, was suffering from a cold, and had dissolved 7 grams of quinine in 3/4 of a liter of Bordeaux wine. He took a little more than one-half of this mixture within one-half hour. Within two hours he noticed failing vision, and in seven hours light perception was all that remained. Seven hours after the ingestion of the drug vision began to return. Complete color blindness lasted 3-4 days. At the end of a week's time V. in O. D. 5/18; O. S. 5/25. Normal vision was eventually recovered. The fundus picture was the usual one of quinine amaurosis. The interesting feature of the case were the fields of vision. The author gives the following resumé of the findings: 1. On both sides there was a zone 10-20 mm. wide, extending inwards from the normal limits of the field for white, in which white appeared as yellow. The field limits for white were narrowed by this yellow zone. 2. High grade contraction for colors persisted. 3. Peripherally from the pathologically narrowed blue and red boundaries, but not in the immediate neighborhood, a narrow zone could be determined, in which blue and red could be recognized, seven months from the onset of the amaurosis. 4. By good sunlight in a zone 10-15 mm. wide, immediately adjacent to the pathological limits for blue, green was recognized.

W. Z.

### Acute Glaucoma, Due to Traumatic Luxation of the Lens.

FRITZ, Mendel (*Centralbl. f. prakt. Augenheilk.*, January, 1909), observed a case where the lens was dislocated into the vitreous, accompanied by increase of tension, severe pain, and a reduction of vision to light perception. Under eserine and a bandage, patient improved so as to be able to count fingers at five meters. Suddenly he acquired severe pain and vomiting, when vision was reduced to perception of hand movements. The lens was extracted with little loss of vitreous, with resulting reduction of pain and inflammation; vision of five-tenths with + 10 D. was secured. M. W.

### Glaucoma and Cyclodialysis.

Ohm, J. (*Centralbl. f. Augenheilk.,* December, 1909), gives some interesting clinical experiences in glaucoma treated by cyclodialysis. In none of the cases did it do harm and all were either checked or improved. In two cases of glaucoma simplex the visual acuity was slightly improved, as was also the field of vision. This condition has held thus for eight months in one case and four months in the other.

M. W.

### The Results Obtained With Schiotz's Tonometer in Normal and Glaucomatous Eyes, Especially Before and After the Various Operations for Reduction of Tension.

Stock, Freiburg (*Klin. Monatsbl. f. Augenheilk.,* Beilageheft, 1910). The conclusions reached by Stock concerning the value of this instrument and the effects on T. of the various operations for reduction of intraocular T., as given by him, are: 1. We have in the tonometer of Schiötz an instrument that with but little practice gives trustworthy clinical results. When in a publication the T. of the eye is spoken of it must be in accurate terms. Statements such as T. + 1, + 2 are in the future to be avoided. 2. In the normal eyes the T. varies between 12 and 26 (27) mm. Hg. 3. As the value of an operation is dependent upon the freshness of the case and freedom from damage to the eye, the tonometer may be looked upon as an important adjunct in affording an early diagnosis and early indications for operation. When we have suspicion of a simple glaucoma we have not to wait until an excavation with atrophy or a narrowing of the visual field has occurred, and we are compelled to operate, but we must operate so soon as the T. is considerable over normal and when we are unable with myotics to bring about a normal T. 4. The tonometer is an invaluable and safe means of determining whether we may treat the case medicinally. We can with much greater emphasis recommend operation when we can demonstrate objectively the increased T. where the vision and fields are normal. Only in very rare cases of glaucoma simplex can, despite hypertonus, the tension, as measured by the tonometer, still lie within the normal limits. In such cases it must be assumed that the T. was earlier lower and that the relative increase in T was sufficient to excite the glaucoma symptom complex. 5. Better results will be secured, as by this means we will resort much earlier to operation. 6. The operation of choice for simple glaucoma appears to be the iridosclerectomy of Lagrange. If this is feared, because of the advanced stage of the glaucoma, the operation of cyclodialysis of Heine, a relatively harmless procedure, may be used, and then in the phase of reduced T. the other operation may be undertaken. 7. Cyclodialysis, as well as iridectomy, has in general in simple glaucoma given the author no lasting results concerning T. 8. In acute inflammatory glaucoma, if not too far advanced, iridectomy gives the best results 9. In inflammatory glaucoma the operation of cyclodialysis reduces the T. to normal or subnormal; this result is often not permanent, even after repetition. 10. Likewise, when on account of the advanced stage of the glaucoma an iridectomy is to be feared, the cyclodialysis may be performed, and later either iridectomy or iridosclerectomy made. 11. If the operation is not entirely sufficient, the T. may be further regulated by eserine-pilocarpine. W. Z.

### The Eye in Varicella.

Sommer, G. (*Woch. f. Ther. und Hyg. d. Aug.*, April 1, 1909), speaks of the extreme uncommonness of eye complications in varicella, and reports a case of marginal phlyctenulæ, with infiltration of the cornea, occurring in a boy five years of age afflicted with varicella. The child was not scrofulous nor were there enlarged glands, affection of the lungs, or sign of any other constitutional disease. M. W.

### Acute Cerebro-Spinal Meningitis With Hemianopsia and Hemianopic Pupillary Reaction.

Ginsberg, Sigmund, and Dessauer, Paul (*Centbl. f. prakt. Augenheilk.*, February, 1909), made careful notes in a case of presumably epidemic cerebro-spinal meningitis where a puncture showed polynuclear leucocytes and meningococci. A week after the onset of the disease there was a left-sided hemianopsia with a large central scotoma in the right visual field. Nine weeks later, ophthalmoscopic examination showed a grayish white atrophy of the right optic nerve, with a slight pallor of the temporal side of left disk. Four weeks later a positive hemianopic pupillary reaction could be demonstrated.

This remained permanent for a month and then became transitory and gradually disappeared. Occasionally the right pupil refused to respond to light. Finally there was no reaction to light in either eye except centrally. This was the status at the end of eighteen months. The convergence reaction was normal during the entire period. The central scotoma, right, gradually disappeared, and the visual acuity rose from fingers at 15 c. m., right, to 6/10 and from 2/10 to 5/10 in the left eye. The ophthalmoscopic picture remained unchanged. M. W.

### Concerning Chronic, Circumscribed, Disseminated Tuberculosis of the Chorioid.

Ginsberg, Berlin (*Archiv. f. Ophth.*, Vol. LXXIII, Part 3), reports a case of chronic, circumscribed, disseminated tuberculosis of the chorioid in a 2½-year-old infant, which he claims to be the first case examined histologically after an extended period of observation (almost one-fourth year).

In the right eye, near the macular region, were three greyish white, partly pigmented patches, simulating areas of chorioidal atrophy. In the other eye there was a round, yellowish grey, not sharply defined, area far out in the periphery, which he considered to be a miliary tubercle.

Though the three lesions in the right eye were suggestive of a finished pathological process, subsequent examinations showed a progressive increase of size, associated with changes of pigmentation and edema of the optic nerve. The miliary tubercle remained unchanged.

*Pathological Diagnosis.*—General miliary tuberculosis and conglomerate tubercle of the brain.

Histological examination of the right eye disclosed in the chorioid three tubercular foci, two of which had penetrated the sclera. The occurrence of connective tissue almost everywhere in the boundary layers showed that a healing process had begun. The surface of the infiltrations was covered with pigmented, granulation tissue, newly formed connective tissue and exudate; over the oldest lesion connective tissue predominating. Only few isolated tubercle bacilli were found.

An interesting feature of the case was that the ophthalmoscopical picture, at least in the right eye, gave no clew as to the extent or nature of the lesions, the non-tubercular epichorioidal tissue obscuring the tubercular infiltrations. The latter may account for the fact that the chronic form of disseminated, circumscribed tuberculosis of the chorioid (to which v. Michel has called attention) has met with rather tardy recognition.

The author's findings lend support to v. Michel's view, that isolated, ophthalmoscopically, visible atrophic patches of retinochorioiditis in fundi otherwise normal in appearance often represent healed tubercular foci. They also show that a positive opinion concerning the stage of the disease process cannot be obtained from an ophthalmoscopical examination.

A. C. S.

### Solitary Tubercle of the Posterior Segment of the Eyeball in Early Childhood.

Natanson, Sr., Moscow (*Klin. Monatsbl. f. Augenheilk.*, February, 1910), records two cases of this condition. The first was seen in a child 2 years of age. Clinically the case closely resembled glioma. Macroscopically the whole posterior segment, including the papilla, was involved in a flat tumor which reached the equator. The retina was detached by an exudate. The optic nerve was greatly thickened. The angle of the anterior chamber was blocked. Microscopically the portion of the chorioid corresponding to the position of the tumor contained no normal structure; it was greatly thickened and was composed of granulation tissue, epithelioid, round and numerous giant cells, and there was extensive caseation. The optic nerve, to the depth of the lamina cribrosa, was necrosed. Its sheath was infiltrated with tuberculous elements, as was also the inner layers of the sclerotic. The retina was degenerated, but was free from tuberculous changes. The sclerotic was perforated near the optic nerve and through the opening the tumor mass had penerated into the retrobulbar tissues. Tubercle bacilli were not found.

The second case occurred in a child 2 years of age, and was clinically similar to the first. Microscopically the entire vitreous chamber was involved in a tuberculous mass. The sclerotic was perforated near the ciliary body. Tubercle bacilli in scant numbers were present in the granulation tissue.

In considering the differential diagnosis, the author says that inflammatory symptoms, subnormal tension, an age too old for glioma and too young for sarcoma, and the early involvement of the sclerotic, are significant of tuberculosis. The physical examination and the family history are important.

W. Z.

### Actinomycosis of the Cornea.

ROSENHAUCH, Cracau (*Klin. Monatsbl. f. Augenheilk.*, February, 1910), reports two cases. The first was seen in a boy 5 years of age. The history was indefinite, but the child had been playing in the fields. There had been a catarrhal condition of the eye for three weeks. The lid margins were hyperemic, as was also the conjunctiva, especially the bulbar. In the cornea, within the fissural space to the temporal side close to the pupil, there was a dull, yellow, round, sharply-defined elevation 1 mm. in diameter. Extending up to it from the limbus there was a band of superficial vessels. The removal of the bleb, which was easily accomplished with a spud, left a superficial ulcer with a clean, uneven floor. Recovery was very prompt under warm compresses, yellow salve, cocaine and xeroform salve.

The second case occurred in a boy of 2 years. The history was much the same as in the first case, and clinically it was almost identical.

Very exhaustive bacterial investigations were made, which proved that the fungus which was grown belonged to the actinomycosis group and was of a type not heretofore described. Inoculation experiments determined that in the guinea pig the corneal lesion was quite insignificant and rapidly disappeared, but that when the fungus was introduced into the anterior chamber it grew rapidly and set up serious inflammatory symptoms. This is in keeping with the behavior of the spores in culture media. It was found that they developed rapidly in moist media, and either not at all or only very slowly on dry media. Photographic reproductions of the appearance of the cultures are given. W. Z.

### A Case of Actinomycosis of the Orbit.

ZAHN, Tübingen (*Klin. Monatsbl. f. Augenheilk.*, February, 1910), records a case of actinomycosis of the orbit occurring in a peasant woman 33 years of age. About ten months previously she had had a swelling of the jaw, which had been recognized as due to actinomycosis and had been incised. There was a high degree of exophthalmos, with marked induration and swelling of the surrounding tissues. There were numerous fistules, from one of which, just beneath the eyebrow, pus was oozing. Except for a peripapillary opacity of the retina and slight hyperemia of the veins, the fundus was normal. Typical fungi were found in the removed glands. The author has collected nine cases of actinomycosis of the orbit. W. Z.

### The Relation of Mikulicz's Disease to Tuberculosis and Pseudoleukemia.

Fleisher, Tubingen (*Klin. Monatsbl. f. Augenheilk.*, March, 1910), gives the case notes of four cases of Mikulicz's disease, some of which have been previously reported. All of the cases occurred in young people, and in all there was complete recovery. In all there were either the phenomena of tuberculosis or those which are attributed to a tubercular diathesis. The first case was that of a 10-year-old girl, with symmetrical swelling of the tear, salivary glands and various lymph glands and the spleen. Blood normal. Peculiar nodules in the conjunctiva. Anatomically the conjunctival nodules proved to be nodes of epithelioid cells with surrounding infiltration of round cells and giant cells. Collections of epithelioid cells replaced in part the glandular structure of the glands of Krauss.

The second case occurred in a 17-year-old man. There was symmetrical swelling of the salivary glands and extensive enlargement of the lymphatics throughout the entire body. Serious tubercular nodular disease of the conjunctiva. Blood normal; tuberculin test positive; pulmonary tuberculosis. Under Roentgen ray treatment and new tuberculin, complete cure.

Case 3 was seen in a girl 20 years of age. There was a symmetrical enlargement of the salivary and tear glands and extensive lymphatic involvement. Nodular swelling in the skin of the arm and cheek. "Lupus pernio." Blood normal. Anatomically the tear glands showed epithelioid nodules in the glandular substance, with round cell infiltration. Fibroid degeneration of the pathological tissue. Bacterial examination negative.

In the fourth case there was bilateral symmetrical enlargement of the tear and salivary glands with extensive lymphatic involvement. Threatened tuberculous iritis. Chronic tuberculosis of the lungs. Blood normal. Complete cure under new tuberculin. The submaxillary gland showed epithelioid nodes with giant cells within the glandular tissue. Beginning fibroid change. Inoculation in rabbits negative. No bacilli found. He concludes from these studies that Meller's view that in some cases Mikulicz's disease is nothing more than a peculiarly modified tuberculosis is correct. He does not believe that there is an etiological relation between true pseudoleukemia and this affection. The occurrence of skin nodes and periosteal thickenings are explainable also if the disease is considered a tubercular one. W. Z.

### The Eyeground in Morbus Corruleus.

KRAMER, RICHARD, Wien (*Zeitschrift f. Augenheilkunde*, January, 1910, Band XXIII, Heft 1). The patient was a 19-year-old boy, in whom the post-mortem findings later disclosed the pulmonary artery contracted to the diameter of a pipe stem, patulous foramen ovale and a defect in the intraventricular wall, an infiltration of the lungs and warty endocarditis.

The face, conjunctiva, and eyeground were very dark red in color. The retinal veins were four times larger than normal, deep black in color, very full and tortuous, accompanied by a broad, bluish white reflex, which latter was present even on the small corkscrew-like veins. The arteries were twice the normal in size and not so tortuous. There were no evidences of hemorrhage, past or present. F. K.

### Concerning the Etiology of Non-Gonorrhoeal Urethritis.

LINDNER, R., Vienna (*Wiener klin. Woch.*, February 24, 1910), examined the urethral discharge in three acute and seven chronic cases of so-called non-gonorrheal urethritis. In the recent cases only were structures found identical with those observed in trachoma (cell inclusions, initial formations, red granules, etc.). As is generally the case in trachoma, the bodies could only be demonstrated during the incipient stages of the disease. One of the more chronic cases was complicated with an acute trachoma of one eye. Though

Prowazek's inclusions were present in the conjunctiva, none could be found in the urethral discharge.

The author concludes that the occurrence of Prowazek's inclusions in the female genitalia and in non-gonorrheal urethritis, and the resulting positive inoculation of the conjunctivæ of monkeys with the secretion obtained from inclusion blenorrhea, from the vagina and from non-gonorrheal urethritis (Fritsch) complete the chain of evidence in favor of attributing these diseases to the same organism. A. C. S.

### Further Contribution to the Hereditary Transmission of Strabismus.

SICHERER, V., Munich (*Muench. med. Woch.*, December 28, 1909). In a family consisting of six daughters and two sons, the daughters all exhibited a convergent strabismus. Neither parent squinted nor either of the father's relatives. The mother's two brothers squinted. The maternal parents did not squint, but some of the maternal father's sisters or brothers (it was not possible to determine which sex was affected) were cross-eyed.

One of the two nonsquinting sisters of the mother has two squinting daughters; one of the squinting brothers has three sons and two daughters, no strabismus being manifest. Two of the six squinting daughters are married to non-squinting husbands, one has a daughter without squint, the other a son with squint. One of the brothers has a 4-year-old daughter who doesn't squint. Strabismus thus alternately affected the female members of one generation and the male members of the next generation. The squint in every instance apparently was limited to the left eye. A. C. S.

### A Rare Case of Congenital Anophthalmos With Lid Cysts.

WICHERKIEWICZ, Cracau (*Klin. Monatsbl. f. Augenheilk.*, February, 1910). The points of interest in Wicherkiewicz's case of congenital anopththalmos with lid cysts, seen in a male child 18 months old, were that the cysts reached well into the orbits and on the right side into the antrum of Highmore. The cysts were tapped. A chemical study of the contents of the cysts showed the presence of erythrocytes and a pigment belonging to the melanine group, which makes it probable that it was derived from retinal pigment; likewise the presence of an albuminous body in the cyst fluid may have had its origin in a shrunken eyeball. W. Z.

### A Case of Sarcoma of the Orbital Muscles Caused by Trauma.

MAURO, Tokio (*Klin. Monatsbl. f. Augenheilk.*, January, 1910). The patient, who was a man 42 years of age, had been struck in the temporal portion of the globe two months previously by a bamboo stick. Three days later there was a slight swelling of the conjunctiva, and six weeks later he could no longer work on account of pain and failing vision. There was a proptosis downwards and outwards of 12 mm. The bulbar conjunctiva was greatly swollen and of a firm consistence. The cornea presented a ring ulcer. The eye was enucleated. Macroscopically the superior rectus was entirely involved in the new growth, which extended from the cornea to the optic foramen. The upper surface was convex and the under surface concave. It was covered anteriorly by the conjunctiva and it was attached by its under surface to the sclerotic. It was smooth and yellowish white. It was beset lengthwise by whitish, translucent streaks. It was a round-celled sarcoma, with here and there cells of an irregular or slightly spindle shape. The author could find but three other cases of primary sarcoma of the orbital muscles reported in literature. W. Z.

### Transient Post-Traumatic New Growth of the Iris.

FRUCHTE, Barmen (*Klin. Monatsbl. f. Augenheilk.*, February, 1910). Following a perforating wound of the cornea with traumatic cataract, by a flying piece of wood, without direct injury to the iris, but in which particles of the cortical continually dropped into the bottom of the anterior chamber and projected upon the anterior surface of the iris. They were avascular. In a month's time they had entirely disappeared The author considers them analogous to granulation tissue and the result of irritation from the cortical matter, and possibly also by a small particle of wood, which may have entered the eye at the time of the injury. W. Z.

### Fibroma of the Orbit.

STEINER, L. (*Centralbl. f. prakt. Augenheilk.*, September, 1909), reports a case of simple fibroma of the orbit in a

Javanese child twelve years of age. The growth was about 6 cm. in diameter and protruding 3 cm. beyond the surface of the orbit. The growth was almost altogether covered with skin. In the inner portion of the palpebral fissure the eye could still be seen, and retained light perception and fairly good movement in all directions excepting outwards. The left eye was slightly affected with trachoma, but otherwise normal. The growth was removed, together with the conjunctiva and globe, and was found to be entirely free from the periosteum of the orbit. Microscopical examination by de Haan of the Pathological Institute of Bavaria revealed a true fibroma. The extreme rarity of unmixed growths in the orbit is the author's excuse for publication. M. W.

### Concerning Cyst and Tumor Formations of the Pigment Epithelium of the Iris.

Gilbert, W., Munich (*Klin. Monatsbl. f. Augenheilk.*, February, 1910), observed in a woman, 67 years of age, a marginal projection of the lower inner quadrant of the iris, which diminished in a radial manner towards the sphincter muscle. Towards the ciliary border it was strongly pigmented. After a preliminary iridectomy, a ripe cataract which was present in this eye was removed. One year later the eye was enucleated because of secondary glaucoma. The tumor was a pure epithelial new formation, having its origin in the pigment epithelium of the iris. - The tumor cells possessed for the most part a cylindrical form, with large oval to round nucleus with a distinct nucleolus. In the deepest and middle portions of the tumor there were swollen cells, whose protoplasm had in part or entirely disappeared; that is, they had undergone hydropsical degeneration. There was a large necrotic area in the center of the tumor. There were several smaller cysts at other localities of the pigment layer of the iris. There was also an "anterior chamber" cyst. The anterior chamber, and in part the posterior chamber, was lined with epithelium. This the author attributes to the cataract extraction. W. Z.

### Concerning Tumors of the Iris.

Waldstein, Prag (*Klin. Monatsbl. f. Augenheilk*, March, 1910), reports a case of tumor of the iris in a woman 44 years of age. The growth had been noticed for about one year, and was now of the size of a pea, occupying the upper-inner quadrant of the iris. It projected beyond the pupillary margin and did not quite reach the root. It was orange red in color, finely granular and quite vascular, especially at its border, and presented numerous hemorrhagic spots, from one of which a fine stream of blood was oozing. The growth was removed by iridectomy. Ten months later there had been no recurrence and V. = 7/10. Microscopically the growth was quite uniform in its structure, consisting of large tracts and nests of cells which varied little in form or size. These were separated by sparse connective tissue septa, traversed with blood vessels, which varied in width and vascularity. In the iris portion of the growth there were narrow pigmented cells, probably the remains of stroma cells. The tumor cells were so rich in nuclei that they appeared simply as masses of protoplasm permeated with nuclei. The nuclei resembled those of epithelial and endothelial cells without certain arrangement. The scantiness of the intercellular substance spoke for an epithelial or endothelial origin. Sarcoma might be considered, but the cells resembled in no way heretofore described sarcoma cells. The arrangement of the cells was unlike that of epithelioma. The author believes that if there be increased intraocular tension or absence of the anterior chamber, or if the growth has reached the iris root or complicated the posterior surface of the cornea, it should be enucleated.

W. Z.

### Intrascleral Cysts.

RUBERT, Kiew (*Klin. Monatsbl. f. Augenheilk.*, Beilageheft, 1910), records a case of intrascleral cyst seen in a peasant 22 years of age. It had begun to grow eight years previously. In common with other reported similar cases, it was located at the sclerocorneal margin and was attached to the globe by a broad base. It had the appearance of a bean. The concave border surrounded the cornea, the convex border reached to the retrotarsal fold. It surrounded the lower third of the cornea and was broadest at the nasal half, where it measured 8 mm. It was immovable. The cyst was successfully removed without perforating the globe. There had been no recurrence at the end of 18 months. The finding histologically of particles of grass and particles of needle wood in the parenchyma of the episcleral tissue leads the author to state that he has no hesitancy in connecting these with the etiology of the cyst. The presence of the foreign matter excited alterations in the circulation with a collection of lymph between the lamellæ. At the same time a growth of epithelium from the surface penetrated the wound canal and gradually lined the scleral space. Through cicatrization the canal closed and became snared off. Small islands of epithelium which were found within the scleral tissue were considered as remnants of this epithelial filament. W. Z.

### On the Question of Primary Optic Nerve Tumors.

Löhlein, W., Greifswald (*Arch. f. Ophth.*, Vol. LXXIII, Part 2, p. 335). By means of the specific neuroglial stains, Emanuel (1902) in two, Lourdille (1904) and Fischer (1908), each in one case, have shown that, contrary to the prevailing opinion, true primary gliomatous degeneration of the optic nerve may occur.

The histological findings in a case discussed in full by the writer tend to uphold this view, the examinations disclosing a gliomatous degeneration of the optic nerve closely resembling Emanuel's and Fischer's cases.

The difficulty to differentiate, without specific staining methods, the abnormal fibers and cells of the proliferated neuroglial tissue from the similarly variable elements of connective tissue tumors—even in teased preparations—makes Lourdille's supposition quite probable; that some of the optic nerve tumors described as myxosarcomata, fibromyxomata, fascicular myxomata, etc., by the older writers, may have been unrecognized gliomata of the optic nerve. A. C. S.

### A Case of Unilateral Blindness Following an Injection of Paraffin in the Nasal Region.

Zahn, Tübingen (*Klin. Monatsbl. f. Augenheilk.*, March, 1910). The patient, a woman 41 years of age, had had a paraffin injection given for the correction of a saddle bridge. On coming out of the anesthesia she discovered that the left eye was blind and the vision of the right eye somewhat affected. The following day there was present the opththalmoscopic picture of embolism of the central artery in the left eye. About two years later the nerve was atrophic, the arteries small and there was a deep "glaucomatous" excavation.

There was a general superficial chorioiditis. The fellow eye showed a shallow, steep excavation. The author discusses the difficulties in the way of explaining the passage of an embolus from the nasal area into the central artery, and believes that it is more likely due to the passage by direct communication.
W. Z.

### Injury to the Eyes Through Artificial Fertilizers.

Guillery, Cologne (*Klin. Monatsbl. f. Augenheilk.*, Beilageheft, 1910), as the result of animal experimentation, finds that superphosphates and their byproducts can do serious damage to the eye. Not only do they erode the conjunctiva, but also produce dense opacification of the cornea. The prognosis is not so unfavorable as in burns by lime or strong acids, and only through neglect or carelessness does it seem likely that the extensive destruction of the cornea could result. A spontaneous clearing of the cornea is to be expected. "Kainit," composed of potash and the sulphates and chloride of magnesium, is much less dangerous, producing scarcely more than signs of irritation, although, through repetition of the irritation, corneal haze may result. W. Z.

### Penetrating Eyelash Injury.

Hirschberg, J. (*Centralbl. f. prakt. Augenheilk.*, January, 1909), saw a case of traumatic imbedding of an eyelash in the iris with purulent iritis. He succeeded in extracting the eyelash after cocainizing and making an incision in the cornea; after which he removed the infiltrated portion of the iris. Good vision was obtained. M. W.

### The Treatment and After-Treatment of Burns and Scalds of the Eye.

Pfalz, G., Düsseldorf (*Zeitschrift f. Augenheilk.*, December, 1909, Band XXII, Heft 6). In the treatment of burns and scalds of the second and third degree involving the eyelids, the author believes that in order to avoid cicatrization Thiersch grafts should be used as soon as the line of demarcation is present and the necrotic areas are thrown off. If the eyeball is involved, it is necessary to include the scleral defect in the graft, on account of the deformity produced and the incomplete healing. The transplantation can frequently be performed on the fourth or fifth day.

In treatment of the early stages of burns and scalds, the prime necessity is to secure cleanliness and prevent secondary infection. All other remedies are ineffectual and should be avoided. The astringents should only be used in the secondary catarrhs, and then for a short time only. The increased vascular formations in the conjunctivæ bulbi and palpebrarum following burns and scalds are not to be regarded as inflammatory, and have not the symptoms and consequences of the latter. Treatment is ineffectual, and nature gradually restores the normal condition.

The psychical element should not be disregarded. Prolonged treatment is unnecessary and apt to cause a neurosis in the patient consisting of a hysteria or overvaluation of the results of the injury. F. K.

### The Presence of Spirilla in Iridocyclitis After Perforating Wounds of the Globe.

GRADLE, Prag (*Klin. Monatsbl. f. Augenheilk.*, March. 1910), discovered spirilla by dark field illumination in teased preparations of the iris and ciliary body of an eye enucleated because of iridocyclitis and fear of sympathetic inflammation following a perforation from a piece of wood. The spirilla were not numerous, measuring from 8-10 u in length and 1/4 u in breadth. They possessed energetic self-movement which continued from 20-30 minutes. They were also demonstrable by the dry method of Tusch. Giemsa stain, as well as inoculations, were negative. Sections of the ciliary body staind by Levadatis silver method contained a few spirilla. They were found also in two other cases of perforating wounds and were absent in six others. The cases are reported without any definite assertions as to their significance, but to call the attention of other investigators to their occurrence. W. Z.

### The Action and Value of Subconjunctival Injections of Sodium Chloride.

HERTEL, Jena (*Klin. Monatsbl. f. Augenheilk.*, Beilageheft, 1910). By means of animal experimentation the author determined that after subconjunctival injections of 2½-5% or higher percentages employed, therapeutically the osmotic concentration of the aqueous humor which followed was dependent upon an increase in its electrolytic properties. The comparative therapeutic studies of groups of cases treated gave the following results: In nonpurulent chorioiditis treatment with injections gave an average improvement of 0.38; without, 0.35. In the central chorioiditis of progressive myopia treatment with, average improvement 0.19, without, 0.21. In retinal hemorrhage treatment with, average improvement 0.12, without, 0.22. In vitreous opacities, with, average improvement 0.34; without, 0.29 (the cases treated with were under observation considerably longer, so that time was also an element in securing the improvement. In detached retina, cure resulted with, in 20.3%; without, 15.4%. Temporary improvement—with, 25.5%; without, 53.6%. No change—with, 54.2%; without, 30.8%. General treatment of sweating, inunctions, etc., were used in both groups. The author's general conclusions are that in nonbacillary diseases of the ocular fundus, so far as these were in general accessible to the treatment employed, the subconjunctival injections of salt increased the number of cases improved, but that the degree of the betterment reached, as determined by improvement in visual acuity, was not greater than by previous methods.

W. Z.

### Pyocyanase in Ulcus Serpens Corneæ.

Heelborn, Franz (*Woch. f. Ther. und Hyg. d. Aug.*, April 1, 1909), reports a case of progressive serpent ulcer of the cornea which resisted the usual methods of treatment, where the hypopyon disappeared and the large ulcer and infiltration rapidly healed on the daily instillation of pyocyanase, followed by a bandage. M. W.

### Experimental and Clinical Experience of the Mode of Action of Scarlet-Red in Diseases of the Cornea.

Cords, Leipzig (*Klin. Monatsbl. f. Aug.*, January, 1910), concludes as the result of his study that in nearly all cases scarlet-red hastened the regeneration of the stroma and the formation of cicatricial tissue. This agrees with the observation of Fisher and Wessely, who attribute much importance to this growth of connective tissue, especially as the resulting cicatrix is characterized by firmness. The experience of Heermans that perforations of the tympanic membrane heal rapidly under the use of an ointment is of considerable interest. He confirms Wessely's observation that there is no marked growth of the corneal epithelium. Scarlet red has no antiseption action. His own and Wolfrum's experience have been that the indication for the employment of the substance salve (5% strength) in diseases of the cornea are few. It is of value only in clean ulcers, especially when there remains, as sequelæ, deep tissue loss, hernia of Descemet's membrane, small iris prolapse or a fistula. W. Z.

### Experimental and Clinical Experience With Ion Therapy.

ZAHN, Tübingen (*Klin. Monatsbl. f. Augenheilk.*, January, 1910). In the experiments upon animals Zahn used potassium iodide, sodium chloride, and zinc, applied to the cornea by a cotton-covered electrode 1-5 m. a. for from 3/4 to 5 minutes. With zinc and a small electrode a drying and desquamation of the epithelium and diffuse haze of the parenchyma with keratoconus and keratoglobus as complications followed, according to the strength of the current. With sodium chloride and potassium iodide, contrary to the results obtained with zinc, the cornea remained clear and moist. With a large electrode there were areas of opacification of the cornea and lesions of the epithelium, which cleared up in about 24 hours. Anatomically the changes in eyes upon which zinc had been used were loss of epithelium, and in places where there had originally been a thinning of the substantia propria this was thickened as the result of swelling of the tissue. The line of demarcation between sound and affected tissue was distinct. The deeper layers were as much affected as the superficial ones, indicating a profound action of the iontophores. The endothelium was more or less affected, the cell nuclei staining but faintly.

The changes induced by iodine and chlorine were much less profound. Clinical results with 58 cases of various forms of corneal ulcerations, dendritic keratitis, specific interstitial keratitis, maculated cornea, scleritis and blepharitis ulcerosa are given. In 17 cases of pneumococcus ulcus serpens, 14 were cured either with or without other measures. In all 10 cases with diplobacillus, cure was effected with from 1 to 4 treatments. Five cases of interstitial keratitis were uninfluenced, as were also cases of maculated cornea and scleritis. Dendritic ulcers were healed in two treatments, and blepharitis ulcerosa quickly responded. W. Z.

### Contribution to Trachoma Therapy.

Falta, Szeged (*Klin. Monatsbl. f. Augenheilk.,* January, 1910), gives the results which obtained, after the lapse of from 5 to 16 years, in 87 patients in whom one or both eyes were operated upon for trachoma, making in all 154 operations. Sixty-one eyes were operated upon in individuals under 20 years of age. In two the combined excision was performed and in the remaining simple excision. Before the operation the cornea was clear in 57 cases and affected with pannus in 97 cases. The vision was improved in 108 cases, unimproved in 30 and rendered worse in 12. If the twentieth year is taken as an age division for the cases it can be asserted that for those in the first group the cure is shortened and operative interference of necessity less radical. An acute trachoma will heal more rapidly in a patient 15 years old than in one 40 years of age, and this is true also of chronic trachoma with pannus. Only in exceptional cases, where the tarsus was disturbed, was the combined operation performed. In only one case out of 57 operated upon did the pannus return. In 68% the vision was improved, in 20% it was unchanged and in 8% it became worse. In all of the latter cases pannus had been present. In many cases of trachoma mechanical expression and medicinal treatment suffices. W. Z.

### Pyocyanase.

Ahrens, C. (*Woch. f. Ther. und Hyg. des Aug.,* October 7, 1909), praises pyocyanase-linguer in ulcus serpens with hypopyon. He reports the cure of 17 cases seen in his clinic in Würtzburg, which recovered under pyocyanase, hot water and atropine. The pyocyanase was instilled every half hour during the day. Patients' sleep was not disturbed for treatment. M. W.

### Deutschmann's Serum in Infected Vitreous.

Wiegmann, E. (*Woch. f. Ther. und Hyg. des Aug.,* September 23, 1909), reports a case of undoubted improvement in a case of pus in the vitreous due to an injury, by the use of Deutschmann's serum. A three-year-old boy sustained a ragged, perforating wound of cornea, lens and vitreous, from a wire. Within a few days wound was seen to be infected, with pus in anterior chamber. In spite of cauterization of the wound and atropine-sublimate solution, the hypopyon increased. Deutschmann's serum was now used, one bottle twice a day, for three days. The hypopyon disappeared and inflammation began to subside. The serum was discontinued on account of swelling of the axillary lymph glands. Two days later the hypopyon reappeared and increased irritation, whereupon the serum was continued for three days, one bottle once daily, with disappearance of the hypopyon and gradual subsidence of the inflammation. Inunctions were used in conjunction with the serum. M. W.

### Blenorrhoea Neonatorum.

Fukula, Dr., Vienna (*Archiv. di Oft. Hispano-Americanos,* Barcelona, April, 1909: Abstr. *Woch. f. Ther. und Hyg. d. Aug.,* May 27, 1909), recommends 4% nitrate of silver applied to conjunctiva, and, in very severe cases, even 6%. Then wash off with water or 1/1000 bichloride. He claims that a 4% to 6% nitrate of silver solution is an unfailing cure. That the application should be made to every part of the lid; that it should be made daily, or even twice a day in severe cases; that a cure results in most cases within eight days, or fourteen days at the most. M. W.

### Absorption of Cataract by Resorcin.

Elze, K. (*Woch. f. Ther. und Hyg. d. Aug.,* April 1, 1909), makes a plea for the early recognition of incipient cataract, which he believes can be checked and even in a large number of cases improved by the use of resorcin. He recommends a one-half to one per cent ointment in vaseline to be applied once daily for from three to four weeks. In almost all of the early incipient cases he has noticed improvement averaging forty to sixty per cent. M. W.

### Mergal.

Messner (*Therap. Monats. H.,* October, 1908; Abstr. *Woch. f. Ther. und Hyg. d. Aug.,* February 11, 1909) using mergal extensively in the clinic of Schultz-Lehden, in Berlin, comes to the following conclusions:

(1) Mergal is readily absorbed and obtains results by virtue of its mercuric oxide.

(2) Mergal never affects the digestion, nor were there

signs of mercurial poisoning. Urine remained free from albumen.

(3) Use is simple and easy.

(4) Specially recommended in infectious and idiopathic iridocyclitis.

(5) He believes it is of value in luetic affections, and

(6) Has never seen harm come from its use in tabetic optic nerve atrophy, post and parasyphilitic affections of the eye. M. W.

### Gumma of the Retina Healed With Mergal.

Rosenbach, E. (*Woch. f. Ther. und Hyg. d. Aug.*, February 18, 1909), successfully treated a case of gumma of the retina with increasing doses of mergal. Notwithstanding the disappearance of the swelling, the visual acuity refused to improve above fingers at four meters. M. W.

### New Therapeutic Agent for Herpes Zoster.

Arlt, F. R. v. (*Woch. f. Ther. und Hyg. d. Aug.*, January 28, 1909), describes a case of ophthalmic herpes zoster in which he painted the surface (already blistered) with jodol (Merck) after having cleansed with equal parts of alsol creme and white vaseline. He then covered the entire left side of the face with a mask made of red celluloid and directed the patient to sit in the sun so as to get the therapeutic benefit of the red rays. He claims, under this treatment, the patient experienced no pain and suffered from no scar. M. W.

### On the Value of the Dionin Treatment in Ocular Affections.

Adam, C., Berlin (*Muench. med. Woch.*, February 15, 1910), concludes that dionin is not only an unreliable analgesic, but when employed to clear up corneal opacities, the results are no better than those obtained by former methods or by the natural processes of resorption.

He selected 50 cases of bilateral central macula corneæ, the majority being old cases of parenchymatous keratitis, and treated with dionin only one eye of each patient. Inflammatory symptoms antedated the commencement of the dionin treatment at least six months. Two to fourteen per cent solutions were employed, and in many cases powdered dionin.

Twenty-four cases remained under observation. The duration of treatment varied from two months to one and one-half years. The results were anything but satisfactory. In two-thirds of the cases no improvement followed, and in the remaining third the improvement, excepting one case, was only very trivial. A. C. S.

### Concerning Plastic Operations Upon the Lid Margin.

Blaskovics, Budapest (*Klin. Monatsbl. f. Augenheilk.*, March, 1910). In those cases of trachoma in which there is a trichiasis the result of an associated blepharo-adenitis or where there is in association with the entropium also a distorted growth of the cilia, Blaskovics performs the following plastic operation: Anesthesia is produced with novocain and adrenalin; an intermarginal incision is then made of sufficient length to take in all of the displaced cilia. Two skin incisions are then made, carried down to the tarsus. The first is parallel and ¾ mm. above the lid margin. The second is made with the skin of the lid drawn up to the orbital margin so that the wound canal lies obliquely through the soft tissues of the lid, thus giving to the strip of skin a broad basal attachment. This incision is from ½ to 1 mm. above the first and joins it ½ mm. from its ends. If the skin of the lid is now drawn up to and against the orbital margin the strip is seen as a small island upon the tarsal surface. The bridge of tissue at the lid margin is now dissected up by passing a narrow knife through to the first skin incision from the intermarginal incision. The island of skin is now drawn beneath the bridge of skin so that it occupies the intermarginal gap. This is readily accomplished because of the looseness of the lid skin by using two forceps, the one passed under the bridge to grasp the island of skin, and the other drawing the bridge upwards towards the orbital margin. After the island of skin is well placed in the intermarginal space it is fixed there by two mattress sutures, one at the outer, the other at the inner third of the wound. With a forceps which grasps the margin of the lid, including the graft, the lid is drawn downwards. A double armed suture is used, one needle of which is made to take a 2 mm. horizontal bite through the tissues above the graft down to the tarsus. The two ends are then brought out through the bridge of skin just above the cilia. The skin incision is then brought together by three interrupted sutures. The eye is bandaged for two days and the sutures removed on the fifth or sixth day. W. Z.

### Cyclodialysis.

Elschnig, Prag (*Klin. Monatsbl. f. Augenheilk.*, Beilageheft zum. LXVIII, Jahrgang), first discusses the varieties of glaucoma, and his views can be expressed by a short quotation, "The separation of acute and chronic inflammatory glaucoma cannot be made; the acute glaucoma of to-day is chronic to-morrow. He agrees with most recently expressed views that no sharp boundary exists between simple and inflammatory glaucoma. Acute symptoms arise from a disturbance in the circulation, be it vascular or in the aqueous humor, and this is dependent upon increased intraocular tension, but neither to its grade or time existence. He believes it to be due to a loss of compensation whereby the characteristic changes in the anterior segment of the globe arise—a true "choke phenomenon" (stauungs erscheinungen). He therefore classifies such cases of glaucoma as remain free from the characteristic so-called inflammatory symptoms of the anterior segment of the globe as "compensated glaucoma" and the cases with these symptoms as "noncompensated glaucoma." If the glaucoma has existed but a short time and has not led to marked changes in the optic nerve it is termed "recent glaucoma." The formation of an optic nerve excavation is independent of the existence or absence of compensation. Whether it can occur without increase in tension he doubts, but hopes to have this settled by the Schiötz tonometer. To the patient the value of an operation depends upon its effect upon vision, to the surgeon on the effect upon tension. The fact that under myotics the glaucomatous eye presents no symptoms in the anterior segment has led to the belief that these drugs are curative. His experience with them has convinced him that their value is only apparent. The tonometer shows that the tension is either not at all or transiently neutralized. The ophthalmoscope shows that the deleterious effect on the optic nerve is hindered but not checked. Of course there are benign cases of glaucoma that remain in statu quo for months under miotics, but as a rule the earlier an operation is done the greater its value.

He has in no way altered the technic of the operation, but states that the separation of the uvea from the sclerotic is aided by using a bent spatula. If the operation is at times without result it can at least be said that it practically never causes any harm. It in no way influences the value of the operation that we do not know how it accomplishes its results. After 50 years we are still in doubt as to how iridectomy acts.

His results in 27 eyes with secondary glaucoma leads him to the conclusion that this operation is as uncertain as iridectomy, but he considers that for all forms of secondary glaucoma, with the exception of dislocated lens and secondary glaucoma with enlargement of the anterior segment following scleritis, iridectomy is the operation of choice, and when declined one or more cyclodialyses.

He considers cyclodialysis strongly indicated in hydrophthalmos.

In 16 eyes with absolute glaucoma, 8 were cured, 3 of which had been previously iridectomized. One was cured after a second iridodialysis. Between the two operations an unsuccessful iridectomy had been done. In 17 eyes in which the glaucoma was of the compensated type the operation was performed primarily 14 times; 11 times with success after one performance; once after a second performance. In 2 eyes it was without permanent effect. In one of these cases T. was lowered for 5 months after the first performance, 2 months after the second and 5 months after the third. This case emphasizes the value of the operation, as on the fellow-eye iridectomy was done without influencing the T., and in the first eye an iridectomy considerably hastened the failure of vision. In 20 eyes with noncompensated glaucoma but not absolute, in 16 cyclodialysis was primarily performed and in 11 with success after the first and in one after the second operation. In 4 cases T. again increased. In 2 of these the following iridectomy was successful in one and failed in two. In 7 cases the result was observed over many months, and in only one, 12 months later, was there an increase of T., however with compensation. In 4 eyes with acute glaucoma cure was effected in 2. In one in which failure is recorded an iridectomy was successfully performed on the third day. Later experience shows, however, that the influence on T. by cyclodialysis is sometimes postponed for five days, so that this might have been a success. He sees no ground for cautioning against the operation in recent acute glaucoma, as in his small experience it has been very valuable. He cites one case in which, after the use of eserine to reduce the T., iridectomy was performed on the eye with the lower T. and cyclodialysis on the eye with the higher T., with the result that T. was less influenced by the iridectomy than by the cyclodialysis. W. Z.

### A New and a Modified Instrument for Treatment of Trachoma.

Falta, Szeged (*Klin. Monatsbl. f. Augenheilk.*, January, 1910), has modified the Knapp roller forceps by having perforations as weil as corrugations in the rollers. An applicator for cleansing the instrument is included. His trachoma curette has an "S" curve in the shank near the curette end, this allowing of greater accessibility to the affected parts. He has devised a lid extensor composed of two curved blades, one ending in a spatula, the other in a double hook. The hook blade can be shortened or lengthened by means of a screw. To use it the hooks are engaged in the inner side of the free margin of the lid, the spatula being on the skin surface of the lid. By means of the screw the hooks are made to stretch the conjunctiva so as to expose it in its entire extent. W. Z.

### A Simple Method of Advancement.

Stroschein, Dresden (*Klin. Monatsbl. f. Augenheilk.*, January, 1910), describes an instrument very similar to that introduced by Maxwell some years ago for putting a tuck in the muscle. After forming the loop in the muscle he passes through it a single-armed suture between the instrument and the sclerotic, and after detaching the needle ties one suture over the hook and the other below. The muscle loop is then cut off. The horizontal incision which was made in the conjunctiva may be brought together by first passing the muscle suture through the outer angle of the wound in advancement of the externus and through the inner angle in advancement of the internus. W. Z.

### Unusual Magnet Operation.

Hirschberg (*Woch. f. Ther. und Hyg. d. Aug.*, July 1, 1909), in presenting a case of an unusual magnet operation before the Berlin Ophthalmological Society, calls attention t the comparatively poor results in extraction in America, and thinks it is due to faulty technic. In 1903, of 150 cases reported, 49 were failures. He states that within the past year he has not had a single failure. Michel was just as fortunate.

M. W.

### A New Simplified Method of Enucleation.

Menacho, Barcelona (*Klin. Monatsbl. f. Augenheilk.*, April, 1910). The objects sought to accomplish by Menacho in the method described is: 1. To render the operation more easy. 2. The more ready removal of a larger section of the optic nerve when indicated. 3. To retain the eyeball in good condition for a more ready and complete microscopic examination. After performing peritomy the conjunctiva is dissected up to the equator. The internus and externus are then severed 10 mm. behind their scleral attachments. A thick suture is then passed through each of the tendons of these muscles, which are still attached to the sclera. The ends are then twisted together and given an assistant to aid in fixation. The division of the two remaining straight muscles and the optic nerve is thus made easier. By drawing the eyeball forward by the two sutures the optic nerve can be divided as far back as the point corresponding to its passage through the optic foramen. The suture may be passed through the anterior segment of the globe, but in this way the eye is destroyed for histologic study.

W. Z.

### The Sideroscope and Magnet Operations.

Kanzel, St. Petersburg (*Klin. Monatsbl. f. Augenheilk.*, Beilageheft, 1910), gives the statistics of pieces of iron or steel within the eye seen at the St. Petersburg Ophthalmic Hospital during the years 1902-1906. Their location was as follows: In the deeper layers of the cornea, 15; in the anterior chamber, 8; in the iris, 11; in the lens, 7; in the vitreous, 104. Magnet extraction was undertaken in 138 cases and succeeded in 126 (91.3%). In the corneal cases the tissue down to the foreign body was burned out with the galvanocautery and the f. b. removed with a suitable instrument. This was successful in 7 cases; in the remaining it was necessary to use the magnet. In the anterior chamber cases Hirschberg's hand magnet was used 7 times and the Haab 1. One eye was lost through coexisting intraocular hemorrhage. In the iris cases all were successfully removed by the Hirschberg large hand magnet. In 72.7% final V. = 0.1 or more. In the lens cases 4 times it was removed with the Hirschberg and 1 with the combined magnets. In 2 extraction failed. Because of resulting traumatic cataract the final V. cannot be determined. In the vitreous cases, extraction succeeded in 95 cases; in the 35 the Hirschberg magnet was used and in 23 the Haab; in 37 the combined magnets. The eye was lost in 34 cases, 14 times through panophthalmitis, 8 times through plastic uveitis and 12 times through phthisis bulbi simplex. The associated and post extraction operations were: Abrasio prolapsus iridis, 22; extractio cataractæ traumaticæ, 15; iridectomy for extraction of the f. b., 15; optical iridectomy, 2.

His conclusions are as follows: 1. It is absolutely necessary to sideroscope every doubtful case. 2. Iron and steel splinters must be extracted as soon as possible, as upon this depends in a large measure favorable visual results, and at the same time the possibility of loss of the eye through infection if delayed. 4. It is desirable not to limit oneself to the use of either the hand magnet or to the giant magnet, but in a given case to use either or both. 4. The extraction of steel or iron splinters from the eye resulted in 91.3% of all cases. 5. Good visual results were obtained in 36.5% of all the cases in which extraction was accomplished and in 34.6% of all in which it was undertaken; loss of the eye occurred in 28.2% (28.5% of all attempted). 6. In unsuccessful attempts, good visual results were obtained in 17% of all cases, while in 33.3% the eye lost. 7. The largest number of losses resulted in extraction of the foreign body from the vitreous: 39 out of 104 eyes = 36.2%. W. Z.

### Resection of the Globe.

MUELLER, L. (*Wien. klin. Wochen.*, No. 49; Abstr. *Woch. f. Ther. und Hyg. d. Aug.*, March 11, 1909), considers his method of resection far superior, in most instances, to enucleation. The posterior portion of the globe, with its contents (including uvea, vitreous and lens) is removed. The anterior portion of the sclera and the cornea, together with the recti muscles and conjunctiva, remain intact. He enumerates the following advantages:

First—Unaltered size of the conjunctival sac, without folds or depressions.

Second—Motion of the anterior segment.

Third—Protection of orbital contents.

Fourth—Healing in two days, as in simple tenotomy.

Fifth—Introduction of a prothesis after the third day.

Sixth—Prevention of finestering in the conjunctiva through adhesions with the sclera.

Seventh—Prevention of ptosis.

Eighth—More willing consent of patient owing to resection of only the posterior portion of globe.

Ninth—Better protection against sympathetic ophthalmia than neurotomy or exenteration.

Operative procedure:

1. General narcosis, with injections of 1/1000 adrenaline solutions into vitreous; or subconjunctival and orbital alypin-adrenaline injections; or injection of two parts of 1/1000 adrenaline and one part 5% cocaine solution into vitreous.
2. One cm. vertical separation of the bulbar conjunctiva 4 mm. from the inner corneal margin.
3. Separation of the internal rectus attachment, including a 2 mm. quadrant of the superficial sclera and fastening the same with a thread.
4. Rotation of globe outward and section of optic nerve; no bleeding.
5. Severed optic nerve is grasped and the posterior globe rotated forward, when the obliques and ciliary nerves are cut.
6. Six mm. to 10 mm. behind the limbus the sclera is removed, after having separated the ciliary body from the sclerocorneal attachment by means of the Daviel spoon. The entire bulbar contents are then removed, including the uveal tract and lens.
7. The anterior segment of the globe is then brought into position, the internal rectus sewed into place, and the conjunctiva closed with two or three stitches. M. W.

# ABSTRACTS FROM FRENCH OPHTHALMIC LITERATURE.

BY

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### Subconjunctival Ecchymosis in a Case of Glaucoma Following an Operation.

DAUTHUILE, A., Lille (Ecchymose sous-conjonctivale dans un cas de glaucome à la suite d'un traumatisme opératoire, *Le Nord Médical,* 1910, XVII, p. 70), performed a somewhat difficult preliminary iridectomy in a woman with cataract. About a month later the cataract was successfully extracted, and the patient left the hospital two weeks later with a vision of 1/8. A little over a month later she returned with a glaucomatous attack in the other eye and some irritation of the operated one. An iridectomy was required for the glaucomatous eye, but just at the moment that the fixation forceps grasped the conjunctiva, there was a spontaneous hemorrhage into the subconjunctival tissue, but the iridectomy was made normally. There was much trouble owing to the presence of the blood, which ran into the anterior chamber from the subconjunctival tissue. The next day the lids were swollen, the conjunctiva was bulged forward over the cornea and was very ecchymotic. The next day the lids were discolored, but the condition of the eye was unchanged. The condition of the eye gradually became normal. C. L.

### The Role of Change in the Composition of the Ocular Fluids in the Pathogeny of Glaucoma.

Uribe y Troncoso, Mexico (Role du changement de composition des liquides oculaires dans la pathogénie du glaucome, *Archives d'Ophtalmologie,* 1910, XXX, p. 91 and 151), refers to a previous communication on the influence of an increase in the albuminoid constituents of the ocular fluids in the production of glaucoma, and to the objections raised by Leber, Kalt, Scalinci and Terson. He again describes his method of obtaining the amount of salts and albuminous substances. The excess of the latter in acute over chronic glaucoma is due to the dilatation of the vessels of the chorioid and ciliary body in the acute form. His theory is that the increase of albuminous substances renders the aqueous semicolloid. This increases the difficulty of the fluid leaving the eye and becomes the initial step in the syndrome of glaucoma. The initial cause is the uveal and retinal changes which cause the albuminous increase. He quotes A. Knapp, who found an albuminous transudate in an eye enucleated for glaucoma. The author concludes by discussing intraocular inflammations and hypertension and serous inflammations without glaucoma.

C. L.

### Adenoma of the Meibomian Glands.

Gabrielides, A. (Adénome des glandes de Meibomus, *Archives d'Ophtalmologie,* 1910, XXX, p. 178), reports the case of a boy 15 years old who had been treated for trachoma. The conjunctiva showed two large cicatrices, which divided the surface into three prominences or tumors, which were not distinct from each other, and which were distinctly indurated. A piece of one of the tumors was excised and on microscopic examination proved to be an adenoma of a Meibomian gland.

C. L.

### Cataracts in a Patient With Myxedema and Tetany.

Cantonnet, A. (Cataractes chez une malade atteinte de myxoedème et de tetanie, *Archives d'Ophtalmologie,* 1910, XXX, p. 173), reports this rare combination and claims that his case proves that affections of the ductless gland may react on the eye. The eyes were operated, and the results were very good, the process of healing being exceptionally rapid.

C. L.

### Epithelioma of the Lid Treated by Radium.

POULARD, A. (Epithélioma de la paupière traité par le radium, *Archives d'Ophtalmologie,* 1910, XXX, p. 146), reports a case where silver nitrate cauterization having failed to check the tumor's growth, recourse was had to radium. Within two months it was subjected to treatment with 6 milligrams of sulphate of radium filtered through 2/10 of a milligram of lead. This was done in 12 sittings aggregating 40 hours. Then it was subjected for 3 sittings (6 hours) to the same apparatus surrounded by rubber. The regression started on the fifteenth day of the treatment, and at present the epithelioma is replaced by a pliant scar hardly perceptible. C. L.

### Homonymous Hemianopsia Following Shot-Wound, Not Limited by the Point of Fixation.

COUTELA AND VELTER (Hémianopsie homonyme par coup de feu, a limite passant par le point de fixation, *Archives d'Ophtalmologie,* 1910, XXX, p. 129) report the case of a woman who was shot in the occipital region. She lost consciousness for a few moments, but was able later to go to the hospital. An examination showed a left lateral homonymous hemianopsia. Trepannation showed that the occipital lobe was badly lacerated. Another visual field test showed:

(1) Complete left lateral hemianopsia without conservation of vision in that half of the macula corresponding to the blind area.

(2) Slight concentric retraction of the preserved halves of the visual field, both for white and colors.

(3) No luminous perception in the blind halves, nor was the hemiopic reaction present. Bard's tests were negative. Vision 7/10 on both sides. Four months later the fields were the same, except that there was a slight amount of luminous perception on the blind sides. The half of the macula corresponding to the blind half of the field has no vision. A review of the literature and a discussion of the theory of double innervation of the macula concludes the article. C. L.

### A Case of Sudden Unilateral Amaurosis.

DE CERQUEIRA, Bahia (Un cas d'amaurose unilatérale subite. Etiologie. Pathogénie. Guerison, *Archives d'Ophtalmologie,* 1910, XXX, p. 107), reports the case of a patient who, five days before, suddenly lost all vision in the left eye. The only thing discoverable was a slight anisocoria with mydriasis of the left eye and a slight retinal hyperemia of the same side. Total amaurosis and vague pains on moving left eye. On careful questioning, the patient remembered that she had caught cold while making a long trip, the day before she became sick. This was believed to be the cause of the condition, and treatment was instituted consisting of purgatives, leeches over the mastoid and sweating; later on, strychnin and potassium iodid. This was followed by the use of the electric current. Vision returned to normal. C. L.

### Double Syphilitic Retrobulbar Neuritis. Almost Complete Blindness. Cure by an Active Mixed Treatment.

LaGrange, Bordeaux (Double névrite rétro-bulbaire d'origine syphilitique. Perte presque complète de la vision. Guérison par un traitèment mixte intensif, *Archives d'Ophtalmologie,* 1910, XXX, p. 102), reports the case of a woman denying all syphilitic history, who suffered from headaches and gradually diminishing vision, to almost total blindness. Some improvement under intramuscular injections of mercury, followed later by potassium iodide, which was prescribed by a colleague. When seen by LaGrange, vision was O. D. 1/30, O. S. 1/20, excentrically. Fields of vision showed central scotoma and contracted visual fields. Total loss of color perception. There was a slight hyperemia of the disk, sluggish pupillary movements. Diagnosis, retrobulbar neuritis syphilitica. Mercury biniodide, 0.15 every two days, and potassium iodide, 5.0 daily, for 10 days, raised the vision to O. D. 2/3 and O. S. 1/4. The doses were decreased, but the vision continued to improve to normal in the right and almost normal in the left eye. Fields of vision normal on both sides.

C. L.

### Visual Troubles Produced by Tumors of the Hypophysis Without Acromegaly.

De Lapersonne, F., and Cantonnet, A., Paris (Troubles visuels produits par les tumeurs de l'hypophyse sans acromégalie, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 65), state that such tumors produce visual troubles of diagnostic value and quote the following case:

C., aged 23, seen in November, 1909. Right eye, central vision normal, temporal half field of vision wanting, except for a confused perception of white in a small area. The nasal half is contracted and very irregular. The left eye is blind, but has the power of projection of light in the left half of space, i. e., has quantitative vision in the temporal part. There is a homonymous right lateral hemianopsia. The inequality of vision in the two right halves of the retina is a sign of a basal affection when associated with distinct irregularity of the preserved field. It has been noted before in a case of acromegaly. The pupillary reflexes persist, but the photomotor is more pronounced on the right than on the left. There is no hemiopic reaction. The right disk is slightly pale, while the left is distinctly white. There is a descending optic atrophy. The radiograph showed a mass larger than a walnut in the region of the sella tursica. The authors review 79 cases found in the literature. The ocular symptoms of this condition, as gleaned from these cases are: *Changes in the visual field*—an irregular contraction, if there is optic atrophy, otherwise a hemianopsia, usually bitemporal; if one eye is blind, we may suppose a previous affection of only one-half of the eye. *Optic atrophy*—complete or incomplete, equal on both sides, or more pronounced in one eye than the other, two times more frequent in the right than the left. *Choked disk*—very rare, 16.2% cases, in spite of the size of the tumors. *Transitory amaurosis* only twice except in cases of stasis, where it is frequent. *Exophthalmus*, due to extension of tumor into orbit or to compression of cavernous sinus. *Ocular paralysis*, less frequent than might be thought; may be single, total of one eye, affect both eyes, and even involve the entire motor oculi as an ophthalmoplegic migraine.

The treatment is ingestion of hypophyseal extract, also, since other glands with internal sections are usually secondarily affected, thyroid extract, etc. Radiotherapeutic therapy has given some good results, but too few cases have been treated for exact judgment. The surgical treatment, so far, has not given results commensurate with its dangers, though palliative treatment by trepanation is advisable. C. L.

### A Case of Contagious, Purulent, Blenorrhagic Ophthalmia.

DAUTHUILE, A. (Un cas de contagion d'ophtalmie purulente blennorragique, *Le Nord Médical*, 1910, XVII, p. 33), reports a case of a child, aged 2½ years, with a typical blenorrheic ophthalmia. It was treated by lavage with cyanide of mercury and cauterization by silver nitrate 1 to 50. The mother said she had another child, aged 6 months, with the same condition. The midwife had treated it with boric acid lavage, and advised her not to see a doctor. She had taken no prophylactic measures at the time of delivery. On the ninth day the mother had taken the child to a physician, who had diagnosed the case and treated it as gonorrheal ophthalmia. At the end of 1½ months the child appeared cured, and the mother had discontinued treatment for three weeks. However, the child had become worse again and she had to bring him to the clinic. She, herself, had a leucorrhea containing gonococci. The week before she had an acute conjunctivitis, but no microscopical examination was made of the discharge.

C. L.

### Advice to Beginners in Cataract Operations, and the Treatment of Accidents of Operation.

Langlois, E. (Conseils aux debütants, pour la bonne exécution de l'opérations, de la cataracte et le traitement des accidents opératoires, *Le Nord Médical*, 1910, No. 366, p. 7, and 367, p. 9), decribes the feelings of the oculist at his first cataract operation and discusses (1) the instruments, (2) general and local preparation of the patient, (3) preparations for the operation, (4) technic, (5) incidents, accidents and operative mistakes; postoperative incidents and complications.

(1) A good knife with a sharp point is necessary, and should be used only once. The same kind should always be used, preferably that of Rust of Boston. In eyes sunk deep in the orbit, the knife of Bell-Taylor makes the operation easier. A speculum which may easily be removed and which is light is another essential. It must be resistant, and capable of separating the lids of all patients. That of Pley is the best. The Vacher fixation forceps is the best, because an involuntary increase of pressure will open the shanks and not allow pressure on the ball. He advises the Luer iris forceps, the Wecker scissors and spatula, and a cystitome with a flexible tip. The wire loop of Weber and de Lapersonne's aspirator or Aubaret's syringe complete the list of instruments.

(2) All diseases, whether general or local, must be appropriately treated, such as diabetes by antipyrin 3.0-4.0 gm. daily, dacryocystitis by removel of sac, or creation of a fistula through the skin, etc. Ozena, infected mouths with carious teeth, bony suppurations, visceral affections, all must be treated. A little iodide several days before the operation can do no harm, and certain authors claim it prevents infection. The evening before, instil some drops of cocain, shave the eyebrows and cut the lashes. Wash the lids with soap and cyanide of mercury, irrigate the cul de sac with about 500 gr. of cyanide in water. Remove the fat from the margins of the lid with carbonate of sodium, and put on a dressing of a thin coat of biniodide oil and sterile gauze, not to be removed until just before the operation.

(3) Sterilize the hands and have all necessary instruments and solutions ready, including a lamp for illumination. Cover the head and face with sterilized gauze, leaving only the orbital area free. The rest of the body should be covered with sterilized linen. Instil 7-8 drops of 5% cocain five times at intervals of 3 minutes. Likewise an instillation should be made in the other eye. After the fourth instillation, have patient look to the side, up, and down several times. Then instil 7-8 drops of the following solution: adrenalin gtt. x, cocain muriat. gr. 0.10, aquæ destil. ster. 10 gr. Follow this with the fifth instillation of the cocain.

(4) Grasp the conjunctiva very gently, hold the knife like a pen, and support the ulnar side of the palm of the hand. Make an incision of a little less than one-half of the cornea, keeping in front of the iris. It is best for beginners not to attempt to make a conjunctival flap. Then remove the speculum and place on the eye some cotton dipped in sterilized water. This gives both operator and patient a few moments of rest. Then replace the speculum and if necessary instil a few drops of cocain. In performing the iridectomy it is possible by gentle pressure on the upper lip of the wound to cause the iris to protrude, or, if the hand is steady, the closed iris forceps can be introduced to the margin of the pupillary border, the latter grasped and carefully withdrawn, cut and the cut edges carefully replaced by means of the spatula. The cystitome is introduced as far as the inferior pupillary border, turned, and a cross is made with its point

in the lens capsule. No pressure should be exerted, otherwise the lens may be luxated. This can be prevented by holding the cystitome very inclined. As soon as the incision is made, the iris may bulge forward and the lens press against the cornea. This need not cause any fright, but the next step is proceeded with. A spatula is pressed against the lower corneal surface and a cataract spoon against the scleral lip of the wound, so that the latter gapes, and the lens easily glides out. Remove the speculum, cover the eye with a moist dressing, and warn the patient not to move his lids. Then gently massage the eye with lower lid and the finger, so as to bring all debris from behind the iris into the pupillary area. This can then be removed by a spoon, but this is not without danger of loss of vitreous, and the spoon should never be introduced as far as the pupil. Replace the iris, cleanse the wound, instil cocain and atropin and bandage both eyes. When being returned to his bed, someone must hold his head, and the patient must make no movement until told he may do so. Unless there is pain, the wound should not be touched until the fourth day, a thing which is very hard for beginners to do. Even then, if the lids are normal and there is no discharge, do not examine the eyes, but instil atropin and rebandage monocularly. The patient should be left in semi-darkness and kept on a light diet. On the eighth day a shield can replace the bandage, the patient may eat what he will and may move around his room. At the end of his second week he may wear dark glasses.

(5) Among the many untoward incidents of the operation and their remedies, he notes the following: *A badly chosen point of entrance*—withdraw the knife and wait a few days; *the knife may penetrate the iris*—if at the pupillary border, continue and make an iridectomy thereby, otherwise withdraw it and refrain from operating; *the contrepunction may be bad*—turn the knife forward or backward, dependent on its site; *the cornea may become concave*—cover with moist dressing and wait for the aqueous to reform; *the incision in the capsule may be insufficient*—very carefully reintroduce the cystitome *without pressure; the corneal incision is too small*—enlarge with scissors; *the lens does not emerge*—extract in capsule, as this is then usually very thick; *luxation of lens*—remove with loop; *abundant aqueous flow*—bandage and wait; *loss of*

*vitreous*—do not make incisions too peripherally; if at any time there is reason to fear loss of vitreous, remove speculum and let eye rest; when the flap has been turned back by the lid, replace it and suture; never excise the hernia, as it always causes more loss of vitreous; *expulsive hemorrhage*—compression and morphine. Post-operative: *Acute entropion*—apply collodion dressing; *capsule caught in wound*—do Terson's sclero-iridocapsulotomy; *glaucoma*—myotics and operations for glaucoma; *corneal fistula*—galvanocauterization; *non-cicatrization of corneal wound*—remove interposing epithelium by a smooth stylet, gentle galvanocauterization; *infection*—subconjunctival injections, cauterization, mercury, enucleation if necessary; *sympathetic ophthalmia*—enucleate. *Death*—especially old people. The article concludes with an extensive bibliography. C. L.

### Elephantiasic Sarcoma of the Upper Lid.

TERRIEN (Sarcome éléphantiasique de la paupière supérieure, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 241) reports the case of a child, aged 2½ years, with a huge tumor of the left upper lid. It first appeared as a small tumor in the inner canthus, which was removed when small, but which soon returned and grew rapidly. An exenteration of the orbit was temporarily successful, but later on a new focus appeared on the lower lid, which grew to the present dimensions in three months. The tumor and orbital contents were removed, and this was followed by extensive cauterization. It was found to consist of an encephaloid sarcoma. A return of the tumor has been noticed. C. L.

### Histologic Examination of a Chalazion of the Connective Tissue Variety.

PETIT AND COTONI (Examen Histologique d'un Chalazion a forme conjonctivo-fibreuse, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 237), removed a chalazion from a patient whose family history showed eight deaths from malignant disease. Histologically, the tumor was found to be an encapsulated one of more or less dense embryonic tissue. In places the fibrous tissue formed little spaces, which were filled with cells, especially towards the center being occupied by plasma cells. C. L.

### Hemianopsia Following Malacia of the Optic Tract in the Course of an Acute Meningitis.

Cantonnet, A. (Hémianopsie par ramollisement localisé de la bandelette optique, au cours d'une méningite aigue, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 233), reports the following case: A woman of 19 years of age, with visual troubles for four days, was found to have a right lateral homonymous hemianopsia, with intact fixation. There was a very marked bilateral choked disk; otherwise nothing abnormal. She was suffering from a headache, and her face was very congested. Symptoms of meningitis being present, she was put to bed, but the condition became aggravated, and the patient died. The autopsy showed a distinct meningitis of a plastic variety. There was a malacia of the left optic tract, distinctly visible macroscopically. C. L.

### Syphilitic Tarsitis.

Cauvin (Tarsite syphilitique *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 229) reports a case of a woman of 21 years of age with a syphilitic history, who had a complete ptosis of the left eye. The upper lid was thickened throughout and could be everted with difficulty. The tarsis was infiltrated and very hard. There was no pain. The lower lid was normal. Daily injections of the biniodid of mercury, with increasing doses of potassium iodide, cured the condition in two weeks. C. L.

### Alveolar Sarcoma of the Chorioid.

Weekers and Mouchet (Sarcome tubulaire de la choroide, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 218) report a case of alveolar sarcoma of the chorioid presenting a marked resemblance to a glioma. The patient, a woman of 54 years of age, had diminution of vision in the left eye for six years. When seen she was blind, had T. + 2, shallow anterior chamber, cataract and hyphemia. Diagnosis—Intraocular tumor. For three years the patient refused enucleation, but finally consented, owing to the pain. At the operation the orbit was found involved, and the affecting tissue was removed. One year later it was necessary to exenterate the orbit, owing to a recurrence of the tumor therein. For nearly a year the cure has been complete. Microscopically, the tumor was found to be a leucosarcoma of the alveolar variety, very vascular and telangiectatic, with a tendency to necrosis. C. L.

### Lesions of the Optic Tracts in Cases of Epidemic Cerebrospinal Meningitis.

TERRIEN AND BOURDIER (Lésions des tractus optiques dans les méningites cérébro-spinales epidémiques, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 196) state that lesions of the optic tracts are relatively frequent in the course of epidemic cerebrospinal meningitis. In 42 cases they found 3 cases of neuroretinitis and 16 cases of papillitis. They made a microscopical examination of three cases which died in the first week of the disease, especially of the chiasm, optic nerve and posterior segment of the ball. Their findings are as follows:

The meningitic infection is propagated along the sheath of the optic nerve at the same time and in the same way as at the neck and medulla.

It is a local reaction which is a part of the general process involving the meninges of the cerebrospinal axis.

It begins as an arachno-pial involvement, which may get well or may cause grave lesions of the parenchyma of the optic tracts.

The process is a perineuritis optica diffusa extending along the entire tract, with foci of varying intensity, the most pronounced affecting the intracanalicular portion. The nerve is usually normal, but there may be a secondary interstitial neuritis which tends to result in optic atrophy.

The different steps in the evolution explain the differences in the ophthalmoscopic pictures. For example, the hypertension in the vaginal spaces is shown by a papillitis, while it is easy to understand a convalescence without ophthalmoscopic changes, followed by optic atrophy and blindness.

C. L.

### The Imperceptible Curling of the Lip of the Wound as the Cause of the Non-Reestablishment of the Anterior Chamber After the Operation for Cataract.

TROUSSEAU, A. (Le recroquevillement imperceptible du lambeau, cause de non-rétablissement de la chambre antérieure après l'operation de la cataracte, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 193), states that the usual explanations of the delayed healing of the corneal section, viz.: hernia of the iris and inclusion of a piece of lens capsule, are not sufficient for all cases. These are due to a rolling or curling backwards of the lips, so slight as to be imperceptible to the naked eye, or even oblique illumination, but easily seen by means of an ordinary binocular loupe, aided by focal illumination, or by means of the large binocular loupe of Zabski. Coapting the lips properly will result in prompt union. C. L.

### The Resorption of Simple Senile Cataract.

Bonsignorio (*Clinique Ophtalmologique,* January, 1910, Vol. XVI, p. 11), concludes her article by stating that a cataract can never be too ripe, whereas it is often not sufficiently mature. Practicing during the summer months in the Alps, she had opportunities of observing a number of aged people who came from the remote villages, and amongst these she saw five over 70 years old, in whom both eyes were affected with cataracts, one of which had already been more or less absorbed. These patients all gave the same history; loss of sight in one eye, the sight of that eye returning while the sight of the fellow eye gradually diminished. In the eye where absorption had already taken place there was perception of small objects, such as plates, small animals, etc., at short distances, but large objects could not be distinguished. Iris tremor was never found, although the anterior chamber on the side where resorption had taken place was deeper than on the other side. All these eyes were subjected to an operation; the hypermature cataracts presented this peculiarity, that immediately on the completion of the corneal incision the lens was spontaneously and suddenly expelled in its capsule, the pressure of the knife being sufficient to rupture the degenerated fibers of the zonula. A small amount of vitreous followed the lens, but the visual results were excellent in all cases. The capsule contained a small amount of thick, yellowish or turbid liquid, and the nucleus was reduced to size of a hempseed.

The author states that the resorption of cortical masses left in the anterior chamber after the rupture of the capsule in the ordinary cataract operation is a great rarity; the absorption of the cortical layers and of the nucleus demands an intact capsule, which prompts the retrogression of the lens cells, their emulsion and liquefaction. M. W. F.

# ABSTRACTS FROM ITALIAN OPHTHALMIC LITERATURE.

BY

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### Clinical Notes on Schiotz Tonometer.

ALFIERI, ALESSANDRO (*Archivio di Ottalmologia*, January, 1910). Many instruments have been devised by different authors for measuring the intraocular tension, but most of them have been discarded as impracticable. The tonometer invented by Schiötz is the only one at the present time which can be used for clinical purpose, and, in fact, many prominent ophthalmologists have reported splendid results for the study of glaucoma. Dr. Alfieri has employed it in his private and hospital practice and is very enthusiastic about it. According to him, glaucoma simplex, which is apt to be confounded with other diseases, can be recognized easily, while a slight increase of intraocular tension is impossible to discover by digital examination; iridectomy affords relief in these cases, because it really lowers the tension, as can be proved only by tonometry; the instillations of myotics can be better studied with this instrument, and a methodical and systematic observation of the oscillations of intraocular tension at different times before and after iridectomy can be made. By careful study we could, in a certain degree, explain the unsuccessful results of the operation and the reason why other operative processes, under certain conditions, are more satisfactory.

V. L. R.

### The Transplantation of Adipose Tissue in Adherent Scars of the Margin of the Orbit.

VERDERAME, DR. (*Archivio di Ottalmologia*, January, 1910). Scars which are adherent to the orbital margin, the consequence of caries of the bones and other diseases, produce not only deformity, but very often eversion of the lids. In the clinic of Freiburg, Dr. Verderame has seen Prof. Axenfeld operate in similar cases successfully with a simple and easy procedure. Although the cases are not many, Dr. Verderame recommends the operation highly, either to simply fill up the cavities incidental to diseases of the bones or to straighten the lids. Parallel to the scar and below it an incision is made, the skin is separated from the bone, a piece of fatty tissue taken from the abdomen, inserted under the skin and sutures applied to the incision practiced. The parts so treated will look puffed up for some time, then the swollen surface becomes reduced and finally the region assumes a normal conformation, as is well illustrated by the pictures which accompany the article in question. V. L. R.

### Transplantation of Labial Mucosa for the Correction of Deformities of the Lids Following Trachoma.

Marongiu, Luigi, and Marchi, F. Angelo (*Annali di Ottalmologia*, Anno XXXIX, Fasc. 1-2). The authors have had plenty of opportunity in the ophthalmic clinic of the University of Cagliari to experiment transplantation of the mucosa of the lips in deformities of the lids due to trachoma, and report numerous cases permanently cured, relapses being very rare, even after years of observation. The operative procedure is different, according to the parts of the lids which are altered. The alterations following trachoma are seen on the tarsus, on the margin of the lids and on the eyelashes. With the curvature of the tarsus there may be a shortening of the same and of the conjunctiva, in which case a regular plastic operation must be performed to lengthen this membrane. We may have to do with simple entropion, with entropion associated with trichiasis, with entropion and shortening of the tarsus and conjunctiva, with trichiasis which has resisted other operative efforts. In simple entropion, tarsectomy, according to the method of Streatfield and Snellen's sutures, are sufficient to correct the defect. When trichiasis and districhiasis exist, beside the Streatfield-Snellen operation, an intermarginal incision must be performed, into which a piece of labial mucosa is grafted. If the conjunctiva and tarsus are shrunk tarsectomy is performed in a different way, the cartilage being cut all through from above and the anterior surface downward and posteriorly, and a wedge-shaped piece excised. After the sutures are applied according to Snellen's method and tied, the tarsal conjunctiva becomes the intermarginal space, while the transplanted mucosa widens the conjunctiva already shrunk. Further alterations, as trichiasis, which appears after the other operations, according to the authors, must be treated more radically, and, in fact, they use sutures which, by being tied on small compresses of gauze, divaricate a great deal the intermarginal incision made, so that a larger surface of transplanted conjunctiva becomes visible and more deviation forward and upward of the ciliary margin is produced. In trichiasis of the lower lid, if the conjunctiva is not altered, the same procedure of the upper lids is available, but if the mucous membrane is altered and the conjunctival sinus has disappeared a true plastic operation of the conjunctiva must be performed. This membrane is extensively separated from the tarsus, the wound is kept open with the already described sutures, and an ample transplantation of mucous membrane taken from the lip into this gap is made. The graft becomes tarsal and in part intermarginal conjunctiva. The mucous graft has been histologically examined and found after many years not altered, so that the improvement is permanent. V. L. R.

### The Specific Treatment With Antidiphtheritic Serum in Some Infections of the Eye.

Gallenga, C. (*Annali di Ottalmologia,* Anno XXXIX, Fasc. 1—2). A short time ago Darier announced that in some local infections of the eye due to pneumococcus, gonococcus, streptococcus, etc., he had used with good results the injections of diphtheritic antitoxin. Gallenga, following Darier's work, has arrived at these conclusions:

In pseudomembranous conjunctivitis, whatever the pathogenic organism, the injections of diphtheritic serum have proved to be efficacious. This practically had been admitted by Dr. Pes, at the Italian Ophthalmological Congress, held in Turin in 1898, especially in children, in whom the same treatment seems to be beneficial in blenorrhagic conjunctivitis.

In recent wounds of the globe, without penetration of foreign bodies and with incipient infection, the injections arrest the propagation of the same into the eye.

The treatment is entirely useless in sympathetic ophthalmia and in blenorrhagic conjunctivitis of the adults.

In serious postoperative infections the treatment is useless, while a prompt improvement takes care of the infection along linear wounds (paracentesis), if the injections are begun at the first sign of infection.

Dr. Pes of Turin has spoken favorably of the diphtheritic serum in trachoma. But Gallenga has no proof to demonstrate its utility in this disease. V. L. R.

### On the Specificity of Clamidozoids of Trachoma.

Gallenga, C. (*Annali di Ottalmologia*, Anno XXXIX, Fasc., 1-2). Prowazek and Halberstädter were the first to find in the epithelium some corpuscles which they announced to be specific of trachoma and which they called "clamidozoids." Greef, Clausen, Cecchetto, Bertarelli followed these researches and agreed with the first two authors. At the International Ophthalmological Congress, held in Naples in April, 1908, Clausen and Cecchetto demonstrated the validity of this truth, while Addario and Lodato maintained that such bodies can be seen in other conjunctivitis. Last year at the International Medical Congress at Budapest, Heyman with careful preparations showed that in ophthalmia neonatorum, due to gonococcus, the same bodies described by Prowazek and Halberstädter were to be found. To shed further doubt on the specificity of the so-called clamidozoids, Prowazek and Halberstädter last fall reported that they had observed them in several cases of ophthalmia neonatorum not due to gonococcus.

Lately Lindner of Vienna and Zur Nedden say that in ophthalmo-blenorrhœa and in common catarrhal affections of the conjunctiva the microscope often shows the same results. Dr. Gallenga believes firmly that trachoma is characterized by the presence in the epithelial cells of special bodies not yet well classified, belonging to the group of protozoids, for which the name of clamidozoids can be retained until a better identification can be made. Even now the bodies included in the cells of true trachoma can be differentiated from the others observed in other affections of the conjunctiva, already mentioned. According to our author, the quantity of the granules in the epithelial cells and the morphology of the same, which constitute the so-called clamidozoids, are not the same, and consequently he thinks that with better means of investigation the question of specificity of these bodies will be in the near future admitted. V. L. R.

### Conjunctivitis From Micrococcus Catarrhalis.

Pignatari, Roberto (*Annali di Ottalmologia*, Anno XXXIX, Fasc., 1-2). Catarrh of the conjunctiva is produced not only by Koch-Week's bacillus, by Morax Axenfeld's diplobacillus, by the pneumococcus, bacterium coli, etc., but also by the catarrhal micrococcus. This latter produces an inflammation of the conjunctiva of a very mild nature. The micrococcus in question resembles the gonococcus by which it can be differentiated for its growth and culture in gelatine, and the affection of the conjunctiva discriminated from the more severe one by the clinical aspect of the eye and the favorable termination. The Micrococcus Catarrhalis has been found in bronchial affections, in the normal mucosa of the nasopharynx and in ulcus serpens of the cornea.

This form of catarrhal conjunctivitis is of rather rare occurrence, but the author has observed many cases in the Eye Clinic of the University of Parma in one year and has conducted laboratory and clinical experiments. He has obtained pure cultures from the secretion of the conjunctiva and by inoculation on rabbits and men has reproduced always the disease. V. L. R.

# SOCIETY PROCEEDINGS.

BY

T. B. HOLLOWAY, M. D.,

PHILADELPHIA.

## SECTION ON OPHTHALMOLOGY.

## COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting January 20, 1910. Dr. William Zentmayer, Chairman, presiding.

### Optic Atrophy the Result of Trauma.

Dr. McCluney Radcliffe presented a case of optic atrophy the result of trauma, with the following history: On November 18, 1909, while the patient, a carpenter, was working on a scaffold thirty-five feet high, a plank broke, dropping him twenty-five feet to a platform, from which he pitched forward, falling an additional ten feet, striking on the right side of the head and face. He remained in a semi-unconscious condition for nearly eighteen hours.

Both eyes were closed and discolored from the contusion. The right eye remained closed for three or four days; and when he was able to open it he discovered the eye was blind. He had severe headaches for several days, worse over the right eye.

On his admission to the Wills Hospital, on November 29, 1909, eleven days after the accident, he presented the following condition: There was a slight contusion of the right orbital region, small, subconjunctival hemorrhages on the temporal side of the right eye, probably due directly to the fall; cornea normal, pupil 5 mm.; no response to direct light, but reacted consensually; no perception of light.

The ophthalmoscopic examination showed disk decidedly pale, veins somewhat engorged, arteries narrow and pale, and capillaries almost entirely absent.

The diagnosis was made of optic atrophy the result of traumatism, probably of fracture of the orbit extending into the optic foramen. The treatment consisted of strychnine, to physiological limit, and negative galvanism, but without benefit. A rather unsatisfactory X-ray examination apparently showed a line of fracture of the roof of the orbit extending into the optic foramen. The left eye was normal in all respects.

Dr. S. D. Risley expressed his interest in the group of cases represented by Dr. Radcliffe's patient. He had reported eight cases of atrophy, and now had a ninth case under observation at the Wills Hospital. Dr. Radcliffe's patient differed from those he had observed in the rapid onset of blindness and atrophy of the optic nerve. In his own cases the impaired vision had first been noticed from four to six weeks after the original injury, and the atrophy had progressed to total blindness. In the case at present under observation the retinal vessels were reduced to grayish white stripes, seen only on careful study, but traceable to the limit of the ophthalmoscopic field.

Dr. Holloway referred to the observations of Bruns, Walton and Rawlings concerning basal fractures, and mentioned the probabilities of fractures of the anterior fossæ to involve the optic nerve as the result of involvement of the optic foramen. He also referred to the observations of Rawlings that fractures of the base had a tendency to converge toward the body of the sphenoid bone.

He cited the history of one of the attendants at the athletic field of the University of Pennsylvania, who had been struck in the left frontal region by a sixteen-pound hammer, thrown from a distance of seventy feet, that resulted in an extensive fracture of the skull with involvement of the left optic foramen and subsequent optic atrophy.

Dr. Posey cited a case which he had had under observation some years ago which served to show that the prognosis in this class of cases was not always bad. The patient, a male adult, had received a hard blow over the left eye by the occiput of his child's head, while romping with the child in play. About thirty-six hours after the accident he began to suffer considerable pain at the back of the eye, and to notice that the sight was dim. The dimness gradually increased, so that at the end of the fifth day after the accident the eye was totally blind. Ophthalmoscopically there was marked pallor of the optic nerve, and the venous pulse was much accentuated, the veins on the disk and for several diameters off from the disk appeared to almost collapse at the diastole of the heart. Leeches were applied to the temple, the bowels freely opened by salines, and a dram of mercurial ointment rubbed into the body twice daily. Under this plan of treatment vision gradually improved, so that at the end of two weeks it was normal. Dr. Posey said that the loss of vision was probably accounted for by compression of the optic nerve, either by a hemorrhage or by an extravasation, probably the result of fracture, and thought the observation of the authority quoted by Dr. Radcliffe, that he had not observed hemorrhage into the sheath in any case without fracture, was of considerable significance.

Dr. Ziegler related two cases of head injury that recently applied to the Wills Hospital, in which monocular optic atrophy followed head injuries of the same side. He believed that these cases were analogous to the unilateral optic atrophies following saber wounds of the temple, many examples of which had been observed among the survivors of the Civil War.

He believed that several factors were etiologically active in this condition—fracture of the orbit, effusion, hemorrhage, and plastic exudate. In other words, the optic nerve was strangled by compression. This, however, would not explain why a more insidious atrophy should develop many years after such an injury. He had seen such a case in private practice, and had been able to arrest the progress of the disease by applying negative galvanism.

The cases may not be so rare as we think. The injury frequently causes unconsciousness, and the patient, through inadvertence or forgetfulness, often fails to furnish the oculist with the facts.

### Treatment of Gonorrheal Iritis and Arthritis by Vaccines.

Dr. Edward A. Shumway reported a case of gonorrheal iritis and arthritis, which was successfully treated by an injection of gonorrheal vaccines. Doses of 100,000,000 organisms were employed, and after five weeks the inflammation had entirely subsided, the eye was free from congestion, and the tenderness and swelling of the joints had disappeared. Pain and photophobia were relieved two days after the first injection, no local or general reactions were noted, and no abscesses appeared at the site of inoculation. Dr. Shumway made reference to the literature of the subject of the vaccine treatment of gonorrheal infections, and said that the reports indicated that it was not of much value, in fact was somewhat dangerous, when employed in acute gonorrhea and gonorrheal conjunctivitis; in chronic gonorrhea, in the absence of mixed infection, it was of considerable value; in vulvovaginitis of children, and in complications, such as arthritis and iritis, it was of very great benefit. In these metastatic conditions, at least, the heterologous or stock vaccines were as efficacious as the homologous strain. Some of the English observers, notably Eyre and Stewart, advised the use of small doses of not over 1,000,000 to 10,000,000 organisms, but the majority of American authors had applied satisfactorily doses of at least 50,000,000 to 100,000,000. In the presence of a severe arthritis or iritis, as large doses should be employed as the patient would tolerate.

Dr. Walter L. Pyle referred to some original recent French reports in a manuscript that he was preparing for publication, which were in accord with Dr. Shumway's experience and conclusion after a review of the relative literature. At present it seemed that the gonococcal serums and vaccines were of distinct value in the chronic and secondary manifestations of gonorrhea, such as arthritis and iritis, and of comparatively little value in acute urethritis, conjunctivitis, etc.

Dr. Posey said that he had stated in the communication which he had made to the Section a few years ago, in regard to the administration of antigonococcic serum, that he desired to suspend judgment regarding the value of the serum, for he was not sure that the serum had been properly prepared or administered. He had employed the Mulford preparation, which he now learns was a vaccine and not a serum, and had relied upon his residents to make the test. He had employed the vaccine in at least half a dozen cases, and had not noticed a beneficial effect from it in any case; indeed, in one or two instances he had been rather of the opinion that the reverse was the rule. It is true that the cases in which the serum was employed were of a severe type, a number of them being inflammations of the iris and ciliary body in negroes, whose ocular tissues seem to offer little resistance when seriously infected with any kind of microorganisms. In one of the cases successive crops of boils followed the injections. In view of this experience he was of the opinion that the antigonococcic serum was practically valueless in the treatment of ocular inflammations of metastatic gonorrheal origin.

Dr. Shumway asked Dr. Posey the size of the dose which he had employed in his cases, and said the poor results might be ascribed to an inert preparation, or too small doses.

In reply Dr. Posey said that he was not sure in how high doses the vaccine had been administered. The residents had been told to follow the directions issued by the manufacturers of the vaccine, and in several instances the dose had been administered considerably greater than was recommended by them.

### A Case of Sarcoma of the Orbit in Which the Earlier Stages Simulated Unilateral Exophthalmic Goitre.

Drs. G. E. de Schweinitz and H. Maxwell Langdon reported the case history of a woman, aged twenty-two years, who gradually acquired left exophthalmos, apparently as the result of a fright, and who was considered by those in charge of her to present the symptoms of unilateral exophthalmic goitre, and who was treated for this condition. Gradually, however, it became evident to those who subsequently examined her that the exophthalmos was dependent upon some orbital involvement. Exploratory operation was suggested, but not carried out, until, by the increase of the exophthalmos, there was marked exposure of the cornea and such evident orbital disease that evisceration of the orbit was urged and consent finally obtained. Exploration by the suborbital route was first tried, and the growth, a partially encapsulated tumor 24 by 30 mm. in size, was removed, having sprung from the periosteum covering the upper and outer portion of the orbit. Suspicious tissue, however, was present between the muscles, and was attached to the external rectus muscle; the periosteum was also involved, and there was some erosion of the bone beneath it. Therefore, it was not considered safe to allow the contents of the orbit to remain, and they were eviscerated. The patient made an uninterrupted recovery and rapidly gained in weight and strength.

Microscopically the tumor proved to be composed chiefly of small spindle cells, and in former times would have been classified with the small spindle-celled sarcomas. The character of the cells, however, indicates that the growth belongs to the endotheliomas. The muscle fibers of the external ocular muscles showed chronic myositis, and the external rectus dense infiltration with tumor cells. Some masses of tissue apart from the main body of the growth, and attached externally to the muscle cone, were of similar structure.

The authors called attention to the interesting resemblance of the symptoms of this patient to those of unilateral exophthalmic goitre in their earlier stages, to the long duration of the process, namely, eight years, and to the comparative ease with which the growth had been removed through the suborbital route.

Dr. Langdon stated that there was but little to add to the paper which Dr. de Schweinitz had just read. The case was interesting from a diagnostic standpoint and from the length of time the growth existed without detriment to vision, this function remaining normal until within six weeks of the operation, and then became impaired as the result of corneal traumatism from exposure between the unclosed lids.

The advisability of a Krönlein operation was considered in the spring of 1908, but for various reasons, chiefly connected with the patient's condition, was not performed. X-ray therapy was tried, and three applications were made, but at the last sitting the effect on the ocular circulation and tissues, especially the conjunctiva, was so disagreeable that further treatment was refused by the patient.

Dr. Posey said that Dr. Swindells and he had reported this case before the Section in 1904 as one of unilateral exophthmic goitre. The girl at that time had many of the symptoms of Graves' disease, and no less an authority than Dr. Spiller considered her to be the subject of that disease. There was a family history of goitre, and the girl herself had an enlargement of the thyroid gland. It is of interest to note that at that time she attributed the prominence of her eye and the swelling in her neck to a fright by a negro. Dr. Posey referred to the difficulty in diagnosis in many cases of orbital growth, and said that the statements of the patient could not always be depended on. That very afternoon he had seen a case of pronounced exophthalmos of the right eye in a girl, aged fifteen years. There was no palpable tumor, and the eye was proptosed directly forward. There was a marked neuroretinitis in the affected eye, with considerable edema of the retina. The mother stated that the protrusion of the eye had appeared first when the child was eleven months old, with some signs of inflammation, but that it had disappeared when the child was four months older, and had not reappeared until six weeks ago, when the present condition began to make itself manifest. The surgeons who saw the patient at the Glasgow Infirmary during the first attack were said by the mother to have rendered a diagnosis of either tumor or abscess of the orbit. Dr. Posey said that he had not had sufficient time as yet to establish a diagnosis, but he questioned whether the mother's statement was correct, and doubted, if the exophthalmos had been present in infancy, that it had wholly disappeared during the thirteen years which had elapsed until the proptosis of the eye was again remarked.

Dr. Zentmayer said that the difficulties in differential diagnosis of orbital troubles were well exemplified in a case seen by him some time ago. A man, aged twenty-four years, had had for about a year and a half an increasing unilateral exophthalmos. He thought that there were periods of remission. This was the one symptom that might have to do with sinus disease. After constriction of the nasal mucous membrane he returned on the following day with a handkerchief saturated with a yellowish fluid. The sinuses were then thoroughly explored through a radical operation, and they were found to be free from disease. Vision and fields were good and the optic nerve showed only a slight elevation of the nasal border. Radiographs showed that the roof of the orbit was lower than its fellow. Rather suddenly a marked choked disk developed on the other side, and the nerve on the affected side became somewhat more prominent. An exenteration was performed and a growth was found in the orbit which had probably had its origin in the sphenoid and extended into the orbit and also into the anterior fossa of the skull.

Dr. de Schweinitz, closing the discussion on his own paper, said that the etiological factors in unilateral exophthalmos were often most difficult to determine, especially in the early stages, as this case and those which Dr. Posey had recited well illustrated. He took this opportunity of saying a final word in regard to a patient with unilateral exophthalmos and optic nerve atrophy of the same side, whom he had presented to the Section about a year ago. The inability to reduce the exophthalmos of this patient by pressure had led some of those who had examined her to believe that a growth existed in the orbit or protruded into it from the adjacent sinuses, a condition which Dr. de Schweinitz believed he had, by repeated examinations, excluded. He had suggested that this exophthalmos might be due to intracranial growth in the neighborhood of the third ventricle. At the autopsy a large growth (sarcoma) was found, which sprang from the middle fossa of the skull, growing from the periosteum. The orbit and sinuses were entirely free from coarse disease, the resistance to pressure probably depending upon an edema of the tissues in the posterior portion of the orbit. Cases of this character still further complicate the study of the causes of unilateral exophthalmos.

Dr. Langdon, in closing, said that he had nothing further to add concerning the case, but the idea occurred to him concerning Dr. Posey's case, that granting the history of an early exophthalmos was correct, was it possible that there might be an anomalous early formation of one of the postnasal sinuses, which was enough to produce the first exophthalmos and which drained and now for some reason had again filled.

### Left Homonymous Hemianopsia in a Worker in Lead.

Drs. William Campbell Posey and Clifford B. Farr reported a case of left homonymous hemianopsia occurring in a worker in lead.

Dr. Farr cited the following history: The patient was a brass founder, aged thirty-seven years. He had suffered twice from severe lead colic within a year, and previously from "brass-founder's ague." There was a typical blue line on the gums and granular degeneration of the red blood cells. Normal gastric contents; albuminuria and casts. In the last attack there was nocturnal delirium and later a syncopal or apoplectic seizure without convulsions or paralysis, but followed by left homonymous hemianopsia. There was a gradual but complete recovery of vision within ten days.

Attention was especially drawn to the large amount of lead frequently employed in making brass and to the growing frequency of lead intoxication from this source. Dr. Spiller thought that the hemianopsia was probably due to a small hemorrhage in the occipital lobe; the mental symptoms suggested hysteria ("toxic"), but it was thought doubtful if such definite hemianopsia was ever a result of that condition. A toxic origin was also hardly to be considered, whether from lead directly or from uremia. The literature was briefly reviewed.

Dr. Posey said that an examination of the eye revealed complete left homonymous hemianopsia. Both optic nerves were pale and the retinal veins fuller than normal. The pupils were of equal size (3 mm.) and reacted somewhat sluggishly to light. The Wernicke hemianopic pupillary inaction sign could not be demonstrated. Vision equalled 5/9 in each eye. At the second examination, made a week later, the hemianopsia was found to have disappeared, the fields in each eye being normal for form and color.

Dr. Posey was of the opinion that hemianopsia from lead poisoning must be of rare occurrence, for Lewis and Guillery, in their comprehensive volume on the effect of drugs and poisons on the eye, mention but five instances where this characteristic loss in the visual field was due to that metal. According to these authorities, the first case of hemianopsia due to lead poisoning was reported by Vater in 1832. The next seems to have been recorded by Westphal in 1888 (*Arch. f. Psych.*, XIX, p. 620). In this patient, in addition to the loss in the fields, there was cataract in one eye and optic neuritis in the other. In the third case in the literature, which was reported by Hertel in 1890, there was a left homonymous hemianopsia with narrowness of the retinal arteries and sluggish reaction of the pupils. Hertel attributed the hemianopsia to a lesion in the posterior part of the internal capsule, which had resulted either from a small hemorrhage, in consequence of a general encephalitis, which had been set up by lead, or from a localized ischemia from arterial spasm.

The fourth was reported by Elschnig in 1898 (*Wiener med. Woch.*, 1898, Nos. 27 and 29), in which there was bitemporal hemianopsia in connection with choked disks. The lesion was thought to reside in the chiasm.

In addition to these cases, Bihler (*Archiv. f. Augenh.*, No. 40, 1899) cites an extremely interesting case of hemiachromatopsia in a compositor, aged thirty-nine years. The disturbance in sight appeared suddenly in both eyes. Perimetric examination showed that the visual field of the left eye was lost on the nasal side, in the right eye on the temporal side. The hemianopsia was partial, but there was complete hemiachromatopsia. There was slight nystagmus, and both pupils were small. Ophthalmoscopic examination was negative, save for a slight engorgement and tortuosity of the retinal veins. There were no other brain symptoms, and Bihler attributed the findings in the fields to a localized neuritis of the left optic tract.

As has been stated by Dr. Farr, the hemianopsia in the case which has been reported before the Section was thought by him and Dr. Spiller to have resulted from a cerebral hemorrhage.

The simultaneous appearance of hemiparetic disturbances in the trunk with the hemianopsia in the cases reported by Westphal and Hertel seems to indicate that the hemianopsia, in at least some of these cases of lead encephalitis, is due to a lesion in the internal capsule.

In conclusion, Dr. Posey called attention to Bihler's belief that the prognosis for the recovery and restoration of vision is not unfavorable in hemianopsia from lead encephalitis, and this appearance is justified by the rapid disappearance of the loss in the fields in the case which has been reported this evening, as well as in that of Hertel, in which there was a perceptible increase in the size of the fields, even in the short time the patient was under observation.

Dr. de Schweinitz referred to the interest which the ocular symptoms of lead poisoning had excited among the older writers, and to the "mysterious colic of the ancients," attributed by Tanquerel in his well-known work to the action of lead. Saturnine amblyopia had probably been known for three hundred years, one of the earliest accounts being found in a thesis by Henricus Smetius, written in 1611. Lead toxemia, Dr. de Schweinitz said, might produce transient amblyopia not unlike the amaurosis from uremia without fundus lesions, permanent amblyopia terminating in optic nerve atrophy, optic neuritis, retrobulbar neuritis and optic nerve atrophy, various types of retinitis and alterations in the visual field—concentric contraction, central and peripheral scotomas, and hemianopsia, as had been described in the paper of Drs. Farr and Posey. These ocular symptoms, according to systematic writers, may be due to a direct specific action of the lead on the visual apparatus, or to an indirect action, i. e., the lead has produced changes in the brain, cord, kidneys, etc., which are followed by the eye lesions. The temporary amblyopia had been attributed by some writers, e. g., Thomas Oliver, to an anesthetic action of the lead on the retina and optic nerve, by others (Loewe) to a uniform spasm of the arteries of the visual centers and to an edema of the nerve and nerve sheath. As recent investigations, for example, by Pick of Prague, indicate that uremic amaurosis is due to a poisonous action on the cortical centers because when sufficient vision returns to make the test possible typical hemianopsia may be present, which could not be explained by a retinal lesion, the same explanation may apply to lead amaurosis. Dr. de Schweinitz referred also to the interesting relation of hysteria to certain varieties of toxic amblyopia, and especially to hysterical saturnism and to Goinon's review of this subject, who points out that the subjects of saturnism may suffer from hemianesthesia, hemiplegia, and alterations in the visual field, and may be cured by suggestion. Dr. de Schweinitz agreed with the writers that hemianopsia did not exist as an enduring ocular symptom of hysteria, although as a temporary phenomenon it had been reported by competent authorities. An interesting observation by Janet, Galezowski, Daguenet, and others is that between the period of complete recovery of hysterical amaurosis or amblyopia and the period of complete blindness there may be a stage of hemianopsia. Dr. de Schweinitz thought the relation of hysteria and saturnism, especially in its cerebral manifestations, was an important one, and should be well considered in the study of each case.

In conclusion, Dr. Farr referred to the slight symptoms that might result from even extensive hemorrhages into the occipital lobe; in a recent case slight visual disturbances were the only suggestive symptoms during life.

### Bitemporal Hemianopsia With Unusual Clinical History.

Dr. Zentmayer read the notes of a case of Bitemporal Hemianopsia with Unusual Clinical History. The patient had first been seen in the service of Dr. Norris, at Wills Hospital, nineteen years ago, September, 1890, and had been observed to the time of her death by Dr. Zentmayer, and for a part of the time by Dr. Oliver. Mrs. A., aged 27 years, married; had had two children. Complained of mist before the eyes for six months. Had frontal and occipital headache. Menstruation ceased at 19 years of age. V. = 5/L. Contracted form field with bitemporal hemianopic color defect. Wernicke sign present. Edges of the optic disks hazy, vessels tortuous. Under iodide of potassium vision quickly rose to 5/XV, and remained so until March, 1909. In February, 1891, the form field showed marked irregular bitemporal contraction, but this was temporary, and it was not until October, 1895, that both the form and color fields were typically hemianopic. Little change occurred until March, 1903, when the fields were found to have lost their hemianopic form. In O. D. it extended in the horizontal meridian from 41 degrees on the nasal to 18 degrees on the temporal; and in O. S. from 30 degrees on the nasal to 18 degrees on the temporal. Central V. had increased to 6/IX in O. D. and 6/VI pt in O. S. At this time she was examined by Dr. Spiller, who confirmed the diagnosis of a tumor of the hypophysis. There were no marked intracranial symptoms. She had grown very stout, and there were symptoms of acromegalia. Death occurred from pneumonia, November 19, 1909. No autopsy was permitted. Dr. Zentmayer said that the field phenomena were very difficult to explain, but that he thought the failure for color before form could best be explained by supposing an involvement of the papillomacular fibers, although a referenec to the anatomy of these fibers did not make this theory convincing to him. While Dr. Spiller's view that the regaining of the fields was due to the growth having broken through into the ventricle, thus relieving the pressure, is probably correct, it made it no more easy of comprehension how fibers whose conductility had been interfered with from pressure for nineteen years could regain their function.

Dr. de Schweinitz, commenting on the extraordinary interest of this case history, agreed with the essayist that the explanations which have been advanced to explain the improvements in the visual field, even to complete recovery of its extent, after long-standing bitemporal hemianopsia, were not satisfactory, but he had no others that were more satisfactory. He referred to those cases which may begin with paracentral or bitemporal hemianopic scotomas, which gradually broaden into bitemporal hemianopsia, to those in which the original condition of bitemporal hemianopsia may change and result in symmetrical paracentral hemianopic scotomas and to chiasmal central amblyopia, simulating central toxic amblyopia, as it has been reported by Nettleship. Paracentral or hemianopic scotomas evidently indicate that the lesion is confined to that point on the dorsal surface of the chiasm where the papillomacular fibers of the crossed fasciculus are interwoven.

Dr. Shumway, discussing Dr. Zentmayer's remarks upon the appearance of hemianopic disturbances of color before those of form, thought that in accounting for them we must assume separate conducting fibers in the visual tracts for the transmission of color sensations to the visual centers, which are more sensitive to pressure or inflammation than the form fibers. This would explain also the early contraction of the fields for color in optic atrophy or neuritis. He referred to a case in which, after a fall from a carriage upon the head, the patient had become unconscious, and remained in a dazed condition for two weeks. She was said to have been blind in one eye for six months. Examination after a lapse of six years showed 6/5 vision in each eye, full form fields, but a reduction of the color fields within the 10 degree circle. In such a case we must assume there was an exudate at the base of the skull, which involved the optic nerves, and affected severely the more sensitve color transmitting elements.

Dr. Zentmayer (closing) said he was not prepared to accept the view of different fibers for the transmission of color than for form, and thought that the loss of color before form might better be explained by supposing a difference in the degree of involvement of the same set of fibers.

Meeting of February 17, 1910. Dr. William Zentmayer, Chairman, presiding.

### The Significance of Venous Hyperemia of the Retina.

Dr. Howard F. Hansell, after sketching the origin and course of the longer veins of the orbit and the influence exerted on their caliber by tumors or other diseases of adjacent parts, called attention to the tortuosity of and distention of the retinal veins in affections of the sympathetic nervous system, excluding those cases in which retinal hyperemia was the precursor of retinitis or neuritis, or a sign of brain disease or of defined disease of the orbit or accessory sinuses. The alteration in the caliber of the retinal veins was ascribed to vasomotor changes or underlying disease of the sympathetic system described by Dr. S. Solis Cohen under the name of "vasomotor ataxia." Widening of the commissure, tremulousness of the lids when closed, lagging of the upper lid after the ball when the ball is rotated downward, inequality in the size of the pupils, and retinal hyperemia were frequently associated eye signs. All of them were intermittent. Dr. Hansell thought these signs were the expression of a deranged function of the sympathetic system; a relaxation or overstimulation of the vasomotor nerves and of the unstriped muscular tissue abundant in the orbit.

Dr. Risley congratulated Dr. Hansell upon his valuable contribution, and thought sufficient attention had not been paid to the excellent work of Dr. Cohen on vasomotor ataxia. Dr. Risley said that he had some years ago presented to the American Ophthalmological Society a paper in which a group of cases with exophthalmos and tachycardia and the other group of symptoms characteristic of Graves' disease had been associated with dermographism, and in one case with marked contraction of the fields of vision, but he had not at that time appreciated the significance of the dilated intraocular blood-vessels. He was, therefore, glad that Dr. Hansell had called attention to this symptom in association with the other and significant group of conditions associated with vasomotor disease.

Dr. James Thorington said that in connection with the interesting remarks of Dr. Hansell on the subject of enlarged retinal veins, he wished to draw the attention of the members of the Section to his experience in the study of enlarged retinal veins in the eyes of many of the children in the schools for feeble-minded. He was sure that Dr. Risley, who had also examined many of these children, could bear him out in the statement that the condition was unusually frequent as compared with normal patients. Whether the condition was due to the tuberculous condition of many of these subjects or due to their sedentary life was a question. One patient of Dr. Cohen's that he had seen had vasomotor ataxia, and the accompanying symptoms, large veins, etc., but no change in the fields.

Dr. Ziegler cited as an unusual condition the presence of fugitive red vision observed by him in a case of retinal congestion caused by sudden pulmonary edema.

### Sudden Obstruction of the Retinal Circulation.

Dr. D. Forest Harbridge (by invitation) reported the following cases: He stated that the first case, one of monocular visible spasm of the central artery of the retina, reported at the December, 1905, meeting of the Section, had had no recurrent attacks since December 7, 1905.

Case II. Transient monocular hemianopic blindness, in a patient, aged sixty-three years, the subject of valvular regurgitation and a moderate degree of arteriosclerosis. The attacks recurred at frequent intervals during a period of fourteen months, but since June 7, 1906, the date of the last attack, there had been no recurrence.

Case III. Sudden obstruction of the retinal circulation in a patient aged thirty-one years. The eye became absolutely and permanently blind in about five hours. A great variety of circulatory changes were observed, at times the vessels were practically normal in size, at others greatly attenuated, and still at another time the columns of blood were broken, the current passing in the normal direction, on other occasions in the reverse direction. The patient died, due to uremia, ten months later, and six or seven years after the first premonitory symptoms of misty vision.

Dr. Harbridge believed that the three cases above cited could be accounted for by assuming that primarily they were dependent upon some one of the various types of arteriosclerosis.

Dr. Zentmayer said that he had been privileged to see all three of Dr. Harbridge's cases. The one resembled closely a case previously reported by him of inferior hemianopsia, in which at first there had been temporary obscuration of the whole field, followed by limitation of the temporary blindness to the inferior field, with finally permanent blindness of this area and atrophy of the upper half of the nerve with sclerosis of the superior vessels. Later the left eye went through the same phenomena in the superior field, but as yet the blindness has not become permanent. The condition was ascribed to sclerosis of the ophthalmic artery pressing the nerve against the dural sheath which spans the nerve near the optic foramen. Dr. Zentmayer said that the course of Dr. Harbridge's cases showed how difficult it is to advise such patients. He recalled that Dr. Harbridge's first patient had been told by one of his consultants that he would probably become blind in the affected eye, and advised iridectomy. Yet several years had now elapsed, and there had not even been a recurrence of the attacks. While in the third case blindness had resulted a short time after the onset of the attacks of temporary blindness.

### Blindness Followed by the Passing of Electric Current.

Dr. S. D. Risley presented a paper detailing briefly a history of two cases in which blindness had followed the passing of electric currents of high potential through the body. In one case the loss of vision was monocular and transient, lasting about two hours, with a brief recurrence of partial loss a few hours after recovery from the first attack. The blindness followed the use of the so-called "electric breeze" produced by the static machine. The second case was caused by repeated shocks from an overhead trolley wire in the mines of West Virginia, carrying two hundred volts and carried through his miner's lamp. The last shock was received in June, 1909, and was so severe as to cause loss of consciousness. When he recovered his higher cerebral functions he had gyrating wheels of fire before his eyes, and when these disappeared he had impaired vision, which grew worse day by day, finally driving him from his employment. When seen by Dr. Risley, in December, 1909, there was no perception of light in the right eye, and fingers were counted with difficulty in the left, and the field, which could be taken only with the candle flame, was narrowed to about 20 degrees. The optic nerves and retinæ were healthy, notwithstanding the total blindness of the right eye, the pupil reacted to light thrown upon any part of the retina, and both concentrically and in convergence. The man was unusually helpless, and notwithstanding his ability to count fingers with his left eye had to be led about the hospital. He had melancholia, and not only threatened to commit suicide, but on one occasion attempted to throw himself from the window. Dr. Risley regarded the case as one of injury to the higher visual centers, a view which found corroboration in the man's psychical condition, which at times suggested hysterical blindness, but there was no other stigmata of hysteria. Under rest in the hospital, with daily application of galvanism and tonics, perception of light had returned in the right eye, and the field of vision in the left, which had increased to 30 degrees, could be taken with the white ophthalmoscope handle, but his helplessness still remained.

Dr. Langdon said that he had had the privilege of seeing this case at Dr. Risley's office, and had had an opportunity to study it. There were certainly no fundus changes, the pupils responded well to light, and there was present an unusual amount of hyperopia, between 9 and 10 D. At that time the fields had not been taken, but the case impressed him as having a functional element in it; by that he meant the man thought his vision was worse than it actually was. The fields with the concentric contraction of the left eye and the loss of vision in the right made it very difficult to think that the lesion was in the tracts back of the chiasm, for the field of the left eye should be hemianopic; and the retention of the light reaction showed that the optic tract was unbroken as far back as the geniculate bodies and corpora quadrigemina.

Dr. Ziegler thought these cases of electrical injury might have a mixed etiological origin due (1) to the light flash of the arc when the circuit contacts were made, and (2) to actual electric shock from transmission of the current through the body.

He related such a case seen by him years ago, in which there was retinal anesthesia, contracted fields, and greatly lowered vision. On a few occasions there was crossing of the fields, which would suggest an hysterical element, but this anomaly was probably caused by retinal fatigue and exhaustion. Negative galvanism was applied for one year, resulting in the recovery of useful vision with greatly broadened fields.

### Intraocular Newgrowth.

Dr. Zentmayer presented a patient with an intraocular newgrowth. The patient, a man, aged forty-nine years, first noticed a black spot before the left eye two years ago. He was seen by an ophthalmologist, who gave the information that one year ago he had mapped out a scotoma in the field of vision, but overlooked the principal fundus change because of the small pupil, attributing the field defect to the pallor of the nerve. When first seen by Dr. Zentmayer, three months ago, there was a mound-like swelling, over which the retina appeared steel-gray and somewhat mottled, with a few shining areas. The surface was rather smooth and the margins fairly well defined. It occupied the fundus between the disk and macula, not reaching either the fovea or the disk, and extending to the equator of the globe below. There was no secondary detachment. The disk was decidely pale.

V. = 6/60. The form field is normal and there is an absolute scotoma up and out from fixation, quadrate in shape, and about 17 degrees in extent, with 8 degrees of fixation, and extending within 3 degrees of the horizontal meridian. T. = N. There has been no change in any of the conditions since he has been under observation. The patient is a robust man, who, until two weeks ago, never had lost a day from his work as a freight conductor. During the past year he has been losing considerable in weight. The personal and family history are negative, and the physical examination, including examination of the blood, is also negative.

Because of the age and health of the patient, the rounded contour of the mass, its slow growth, and the absence of hemorrhages, the supposition is that it is a sarcoma, and the man has been advised to have the eye enucleated.

Dr. Risley expressed his belief that Dr. Zentmayer's course in advising enucleation was the only safe one to pursue. Notwithstanding the fact that the eye is now quiescent, he believed it would always be in danger from a lighting up of an acute inflammation through exposure, attacks of ill health or by blows upon the eye.

Meeting of March 17, 1910. Dr. William Zentmayer, Chairman, presiding.

### Tuberculosis of the Conjunctiva.

Dr. G. E. de Schweinitz demonstrated a boy, aged about ten years, whose left conjunctiva, particularly that of the lower lid, contained numerous, somewhat flattened outgrowths resembling granulation tissue separated from each other by deep furrows, but not in any particular degree pedunculated. The surface of these granulations was bathed in a rather free mucopurulent secretion. There was marked, rather dense enlargement of the parotid and submaxillary glands on the same side, as well as of the superficial and deep cervical lymphatic glands, especially those at the root of the neck. This condition of affairs had been present, according to the only but somewhat imperfect history that was obtained, for about three months, and the glandular involvement was said to have been preceded by a febrile period. General examination had failed to reveal any gross constitutional defects other than those which have been described. Von Pirquet's test was not typically active, and the excised granulations which had been submitted to the preparations necessary for microscopic examinations were not ready as yet for section, and, therefore, the histology of them could not be reported. A portion of the granulation tissue which had been implanted in the rabbit's interior chamber had not as yet given evidence of proliferation, nor had tuberculosis formed in its neighborhood.

Dr. de Schweinitz discussed the various points in making a differential diagnosis between tuberculosis of the conjunctiva and Parinaud's conjunctivitis, and stated that it seemed to him more likely that the patient suffered from the former than from the latter affection. When the examinations to which reference was made were completed, which were to be reported at a subsequent meeting, the diagnosis could probably be settled definitely.*

Dr. S. D. Risley said that he thought the symptoms suggested tuberculosis rather than Parinaud's conjunctivitis. The absence of increased temperature by no means excluded a tubercular origin. He had repeatedly taken the temperature at intervals throughout the day and night without detecting any rise, in cases where subsequent injections of tuberculin were followed by pronounced reaction, both general and local, and where great improvement in general health and a cure of the local disease had followed the tuberculin injections. In the cases of Parinaud's conjunctivitis which Dr. Risley had seen the granulation masses were more pedunculated than in the case under study.

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*Since the above paragraph was written a few fine yellowish-red points have appeared in the rabbit's iris.

Dr. Krauss stated that the case exhibited by Dr. de Schweinitz did not resemble the case of Parinaud's conjunctivitis seen by him, in that the large follicles were more flat, scattered, and had a very broad base. The pedunculated appearance of the granulomata was absent.

The glandular involvement of the lymphatic system in all of his cases consisted of more or less isolated glands extending in a chain from the preauricular gland to the submaxillary and anterior cervical glands. In the case reported at the Section meeting last October, the only suppuration occurred two months ago in the cervical gland just above the clavicle. It was excised, the contents being sterile bacteriologically, and consisted of broken glandular masses.

In Dr. de Schweinitz's case the glandular mass was more compact, involving especially the submaxillary and lower part of the parotid glands. Dr. Krauss regarded the differential diagnosis in this case very interesting and rather difficult. He thought it might be an atypical case of Parinaud's conjunctivitis, but he was inclined to believe with Dr. de Schweinitz that the case was probably one of tuberculosis of the conjunctiva.

### Unusual Form of Congenital Cataract.

Dr. George S. Crampton presented a boy, aged nine years, who had a peculiar form of congenital cataract. The eyes were otherwise apparently normal. The vision of each eye was 6/20. There existed a markedly similar film-like cataract in each eye, which was best seen with transmitted light, and was remarkably circular in outline, measured 5 or 6 mm. in diameter, and was probably situated between the nucleus and posterior pole. Each had the appearance of having an index of refraction different from that of the remainder of the lens. Occupying the center of each was a dotted triangle with base up. The opacities did not interfere with the clear view of the fundus. Other members of the family were being looked up for a complete report.

Dr. Shumway said the opacity seemed to him to be situated between the nucleus and the posterior pole of the lens, and its diskoid shape led him to believe that it represented one of the type of congenital cataracts, which was described originally by Nettleship and Ogilvie, in 1906, and has since been spoken of as Nettleship's cataract. It was very similar to the case reported by Chance before the American Ophthalmological Society in 1907, which he had had an opportunity of studying, and a number of additional cases had been described recently in England. Dr. Shumway had seen two cases in private work, in a mother and son. The boy, aged seven years, was perfectly healthy otherwise, and vision could not be improved above 6/15. In the mother's case the opacity had the same diskoid shape, and was situated also between the nucleus and posterior pole, but was very faint, the vision being 6/6 in one eye and 6/5 in the other.

### Tuberculosis of the Anterior Segment of the Globe.

Dr. Zentmayer exhibited a case of tuberculosis of the anterior segment of globe, in a girl, aged 14 years. Eight months ago the left eye had been inflamed for a short time. The present affection began in the same eye about four months ago as a circumscribed elevated violaceous patch in the sclerotic above the corneal limbus. The cornea soon became infiltrated, a gray triangular patch pushing its way into the parenchyma from the limbus. Later similar nodes of sclerokeratitis appeared until at the present time the entire circumference has become involved. The center of the cornea is fairly clear, but there are a few scattered dots of infiltrate in this locality. There is a marked iritis. There are firm synechia and a faint pupillary membrane. The anterior chamber is very shallow. T. — ? V. = 1/60. The von Pirquet test was positive. There had been both local and general reaction after therapeutic doses of tuberculin. The process has not been arrested by the treatment. The physical examination of the patient is negative. She has had measles, mumps, and scarlet fever. Her father died of pulmonary tuberculosis; her mother is living and well. She has two brothers and two sisters, living. None dead.

Dr. Howard F. Hansell stated that the interstitial keratitis of tuberculous origin was represented by the case shown by Dr. Zentmayer. In its appearance it differed totally from the interstitial keratitis of inherited or acquired syphilis. Among the patients displaying the classical symptoms of the latter, the history of syphilis was often difficult or impossible to obtain, and frequently the underlying disease was undiscoverable. Dr. Hansell said that at the present time he had two patients under treatment at the Jefferson Hospital, both girls, aged about fourteen years, each presenting the common signs of interstitial keratitis, and, singularly, each with a tuberculous disease of the bone or joints. In view of the possibility of a tuberculous cause for the keratitis, as demonstrated in Dr. Zentmayer's case, he thought it would be wise to consider, in every case, whether tuberculosis and not syphilis might be responsible.

Dr. Krauss referred to a case of tuberculosis of the cornea which he had under his care at the present time in St. Christopher's Hospital, which had resisted all forms of treatment for several months.

Tuberculin caused a local reaction in the eye after each injection, the inflammation and the opacity extending. The general reaction was practically nil, as only minute doses were used.

### Detached Retina.

Dr. J. B. Turner reported the case of a young man, aged thirty years, whose left eye was enucleated seven years ago owing to a sarcoma of the chorioid, and whose right lens was extracted six years ago. Following a fall last August there developed an extensive detachment of the retina, only the lower and outer portion remaining in situ. The patient was kept in bed for thirteen weeks, and during the last seven weeks the foot of his cot was elevated sixteen inches. A board was placed in the center of the bed to prevent the hips from sinking. He was given potassium iodide, sodium salicylate, and pilocarpin sweats. When in the head depressed position, he complained less of seeing a wave before the eye, and the position did not prove to be irksome. The retina remained in place for six weeks after he left the hospital, and the vision improved from 1/50 to 6/20.

It was hoped that by insisting upon the inclined position at night a relapse might be prevented.

Dr. Turner stated that a retinal detachment in an apakic eye was most unpromising as to cure. He believed that four to five weeks would probably be long enough to be in the head depressed position to achieve results.

### Temporal and Bitemporal Visual Field Defects.

Drs. G. E. de Schweinitz and George Lord de Schweinitz discussed some cases of *Temporal and Bitemporal Visual Field Defects and their Significance.*

Case I.—A man, aged thirty-four years, with normal eyegrounds and normal central vision, developed suddenly a large defect in the right temporal field, in the center of which there was a triangular area of preserved white light perception. The field on the opposite side was nearly normal in extent, but contained in the temporal field a large oval scotoma situated midway between the fixing point and the periphery. Searching examination failed to reveal any cause for this visual field defect except that the patient was worn out by a constantly increasing nervous strain depending upon an arduous business life, and that the X-rays showed an enlargement of the sphenoid body, which communicated directly with the posterior ethmoidal cells. Neurologically, no evidence of disease other than exaggerated knee-jerks and a curious slowness of speech was evident. While under observation the defective temporal field of the right eye remaind unchanged, but the scotoma in the left visual field varied, as did also the size of both fields. A permanent visual field defect in the right eye was a small triangular paracentral scotoma up and out from the fixing point.

The essayists discussed the possibility of sphenoid disease as the etiological factor, pituitary body growth, or possibly an unusual manifestation of the so-called neurasthenic field, but decided that while the diagnosis could not be settled, organic lesion was more likely present than the mere manifestations of retinal tire.

Case II.—A man, aged twenty years, two years prior to examination began to have severe temporal and left vertex headaches, and about nine months before he came observation marked deficiency of vision, which of the left eye was 6/150 and of the right eye 6/22; both disks were atrophic, without evidences of antecedent neuritis, the left being the more affected nerve. There was typical bitemporal hemianopsia, with some contraction of the preserved fields and a crescent-shaped area of preservation of faint white light perception in the center of the dark right temporal field. The X-rays indicated the presence of a growth in the neighborhood of the sella turcica, and the essayists discussed the treatment, as well as the visual symptoms of pituitary body disease, and showed illustrations of the trans-sphenoidal route employed by Schloffer in reaching the hypophysis. As yet their patient had not consented to operation.

Case III.—A Hebrew girl, aged fifteen years, two years prior to examination had submitted to the removal of adenoids. Following this operation were frequent attacks of epistaxis, and six months after the adenoidectomy there was a sudden very severe hemorrhage from the nose, and on the following morning the patient had completely lost the vision of the right eye. At the time of her examination, practically two years after this hemorrhage, there was complete atrophy of the right optic disk, without evidences of preceding neuritis, and with no contraction of the retinal vessels. The vision was only a suggestion of light perception at the upper and inner portion of the visual field. The vision of the left eye was normal, but the visual field showed a large defect upon the temporal side, which had occurred only three months prior to examination, and is said to have appeared suddenly, and at this time there was no epistaxis or other cause for its development. General examinations were negative, sinus disease could not be demonstrated, X-ray examination failed to show any disease in the neighborhood of the sella turcica, and, although such lesion could not be positively excluded, the most likely explanation of the condition appeared to be an atrophy following hemorrhage, such as not infrequently occurs after hemorrhage from the stomach, but which also has followed epistaxis, hemoptysis, urethral and intestinal hemorrhage, and which depends upon a degeneration of the retinal ganglion cells, together with their long processes, which make up the centripetal fibers of the optic nerve. The reason of the sudden loss of the temporal field of the left eye was not apparent, and there was nothing in the eye ground to account for its origin.

Dr. H. M. Langdon cited the following case histories, in which changes were noted in the temporal fields.

The first patient was an epileptic, aged sixty-five years, who gave a history of infrequent convulsions, loss of memory, and for four days blindness on the left side. The right field revealed a slight concentric contraction for form, but a marked contraction for colors, while in the left eye there was a loss of the temporal with contraction of the nasal field and a reversal of the blue and red fields. A later examination revealed a loss of the upper left quadrant of the right field, while the lower left quadrant of the left field was partially restored. The field phenomena were regarded as functional, and disappeared under appropriate treatment.

The second case was one of meningitis, and, when first seen, without ocular changes. Cranial operations were resorted to in 1907 and 1908. When seen after the second operation, the vision was 6/9 in each eye, and there was slight bilateral ptosis, paresis of the right superior oblique muscle, with hyperemic disks and overfilled veins. The left field was normal, while the right field was constricted to 40°. Two weeks later there was marked bilateral optic neuritis and a large central scotoma in the defective right field. Vision of OD = 3/45, vision of OS = 6/9. The condition was regarded as a descending neuritis due to the meningitis.

### Cyanosis Retinæ.

Dr. T. B. Holloway reported the history of a case of *Cyanosis Retina* observed in a child, aged three years, who was under the care of Dr. Charles Fife. At birth the child appeared healthy, and was the seventh of eight children. There was no history of tuberculosis or syphilis. Cyanosis of the hands and feet was first noted at the age of ten months, and this was subsequently followed by general cyanosis and clubbing of the fingers and toes. The urine revealed a slight trace of albumin. A blood examination gave the following results: Hemoglobin, 120; red cells, 9,020,000; white cells, 9280.

The veins of the lids were dilated, the palpebral conjunctivæ purplish or plum-colored. The fundus of each eye was cyanosed, the disks dusky red in color, with an increase in the size and number of the smallest vessels. The veins and arteries were dilated and tortuous, as well as being dark in color, these changes being much more evident in the veins. No free hemorrhages could be noted. No autopsy could be obtained. The clinical diagnosis of the cardiac condition was a defect in the interauricular septum.

Meeting April 21, 1910. Dr. William Zentmayer, Chairman, presiding.

### Tuberculous Keratitis.

Dr. Frederick Krauss presented a case of tuberculous keratitis in a nine-year-old girl. The condition was especially marked in the left eye, and consisted of a yellowish-gray infiltrated area elevated 1 mm. above the level of the cornea and involved nearly two-thirds of the corneal surface.

The von Pirquet test was strongly positive. Medicinal injections of minute doses of tuberculin on four occasions always resulted in an increase of the inflammatory symptoms, characterized by the appearance of numerous phlyctenules on the corneal margin of the right eye, and contraction of the atropinized pupils.

After persisting for four months in spite of rest in bed, diet, bandage, hot compresses, atropine, dionin and various ointments and tonics, the lesion began to improve by absorption of the interstitial portion, the surface always remaining intact. After the condition began to improve it progressed rapidly, a diminishing central leukoma existed three weeks later. There was no change in the treatment to account for the rapid recovery, which was probably due to the gradual increase in the general health of the patient.

### Tuberculosis of the Conjunctiva.

Dr. de Schweinitz, referring to the boy whose ocular conditions had been demonstrated at the March meeting of the Section, these lesions having more closely resembled tuberculosis of the conjunctiva than any other condition, although they also suggested Parinaud's conjunctivitis, stated that the portions excised for microscopic examination showed typical tuberculous tissue with giant cells, although no tubercle bacilli were present. On the twenty-ninth day after the implantation of a portion of the granulation tissue from the conjunctiva in the anterior chamber of a rabbit, tubercles began to appear in the iris tissue, and now eight or ten such tubercles were evident. Therefore the diagnosis of tuberculosis of the conjunctiva was well established. The patient had been treated with injections of tuberculin, which produced a violent reaction, and at the present time local applications of iodoform salve would be tried. There was some evidence of improvement in the ocular lesions and the patient's general condition was very good.

### Left Homonymous Lateral Hemianopsia Occurring in a Case of Lead Poisoning.

Dr. Carl Williams reported the history of a lead worker, aged fifty-two years. The family history was negative, and venereal disease was denied. He had had three attacks of lead poisoning since September, 1908. The last developed in September, 1909, and was associated with a toxic confusional insanity for which he was treated for seven months. In March, 1910, there existed some tremor of the hands, arms, and lips; impairment in the strength of the arms, more on the right side, and an occasional hesitation in speech. The pupils were equal and fairly active to light and accommodation and convergence; the extraocular muscles were normal. In each eye the disk margins were slightly blurred and the temporal half was pale; the veins rather dark in color, the arteries normal. The fields showed a left homonymous lateral hemianopsia. Wernicke's test was negative.

### Methyl Alcohol Amaurosis.

Dr. T. B. Holloway reported the history of a painter, aged fifty-seven years, who had recently come under observation at the University Hospital. In May, 1908, he drank a pint of methyl alcohol, which shortly produced nausea, vomiting, and excessive reduction in vision. When first seen, one week ago, the visual acuteness of the right eye was 1/22, eccentric; of the left eye, 6/12. The disks did not present the clinical picture just described by Fridenberg. The right disk was greenish-white with a shelving cup, but no undue markings of the lamina cribrosa were visible. The left disk was distinctly gray in the temporal half, but only a slight cupping was present. A moderate perivasculitis existed in each eye.

The visual field of the right eye revealed an almost obliterated temporal half, with contraction of the nasal half for form and colors, and a central scotoma. The left visual field was slightly contracted, more for colors. The patient had used alcohol and tobacco to excess for many years.

Dr. de Schweinitz stated that he had been very much interested in Dr. Percy Fridenberg's announcement that in the late stages of methyl-alcohol blindness a characteristic alteration in the nerve-head was present, namely, a deep excavation extending almost to the scleral ring and at times including it, so as to simulate a glaucomatous cup. The mottled markings of the lamina cribrosa in the excavation exhibited no trace of connective tissue in their depth. He had examined several cases of methyl-alcohol poisoning, but had not found in all of them such a condition of affairs, although in one instance, that of a patient who had become blind from drinking large quantities of Jamaica ginger in which the active poisonous agent was methyl alcohol, the nerve-head was very like the one described by Fridenberg. In another case, however, and this was undoubtedly a perfectly pure methyl-alcohol blindness, inasmuch as the patient had a most excellent reputation and was not addicted to any drug habit, and had become blind while working with Columbian spirits as a shellacer, although there was a complete atrophy of both nerves, such cupping of the nerves did not exist at the last examination. It might have developed since that time.

### Hemorrhagic Retinitis With Proliferating Membrane.

Dr. McCluney Radcliffe reported upon the macroscopic and microscopic findings of the case which he had presented before the Section at the December meeting, the clinical diagnosis of which was doubtful.

The macroscopic examination showed a large, dense, black, tumor-like mass occupying the vitreous chamber on the temporal side, posterior to the equator and below the disk. This mass was attached to the retina, but did not penetrate to the chorioid, coming away readily when it was lifted from its place. The retina was attached, but was edematous and very brittle. A delicate reddish membrane, originating from a large hemorrhage in the ciliary processes on the nasal side, extended upward and outward in a fanlike shape.

The microscopic examination showed large hemorrhagic areas in the ciliary processes enclosed within walls of pigment. The membrane-like structure was covered on its anterior surface with fibrin and other blood products. The tumor-like mass in the vitreous was made up entirely of red blood cells in a later stage of change than the anterior hemorrhage. The optic nerve was atrophic.

The pathologic diagnosis was hemorrhagic retinitis with proliferating membrane.

### Traumatic Enophthalmos.

Dr. A. C. Sautter presented a case of traumatic enophthalmos in a twenty-five-year-old man, who nine months previously had been struck in the right fronto-temporal region by a baseball.

The patient presented a marked right-sided enophthalmos, the eye being about 5 or 6 mm. further within the orbit than the fellow eye. According to the patient's statement, recession of the eyeball was first noticed about five weeks after the accident—after the subsidence of inflammatory symptoms. Extending below from the right inferior orbital margin, a narrow, bony depression was palpable. There was impairment of right upward rotation and slight limitation of right adduction. The right pupil was dilated and responded sluggishly to light, accommodation and convergence. Cocaine caused a still greater dilatation. The disk was pale and just below the macular region a triangular, not sharply circumscribed, patch of old retinochorioiditis could be seen. Vision of O. D. with + .50 ax 90 = 5/20.

Examination of the visual field showed a moderate contraction for form and colors. The vision in O. S. was normal, and the fundus examination negative.

X-ray examination showed evidences of a former fracture at the external orbital margin, including the floor of the orbit, and a fracture involving the nasal wall extending into the ethmoidal and possibly the frontal sinuses.

The enophthalmos was attributed pimarily to a rupture of the anterior ocular attachments (check ligaments and Tenon's capsule, or to a relaxation of these ligaments, due to fractures of the orbital margin), secondarily to the formation of cicatricial tissue within the orbit.

Dr. Wm. T. Shoemaker thought that the functions and anatomical relations of Tenon's capsule, the check ligaments and the orbital fascia were such as to make it impossible to have enophthalmos without their disturbance. In other words, did these structures remain intact, there could be no permanent translation of the eyeball. All of the theories for the production of traumatic enophthalmos, with few exceptions, seemed to properly explain some cases, but whether there be a fracture, organized hemorrhage, absorption, or disturbance of Tenon's capsule and its accessories—the eyeball does not recede until this latter disturbance in some way or other takes place.

That some cases of traumatic enophthalmos were due to a rupture of Tenon's capsule and the check ligaments, without other conditions, he was convinced; that fracture of the orbital walls, as, for example, in Dr. Sautter's case, was a frequent result of the injury was undoubtedly true, but, in his opinion, the resulting enophthalmos in such cases was more often due to a lesion of Tenon's capsule and the orbital fascia at their mural attachments, or elsewhere, than to increase in the size of the orbit, hemorrhage, cicatrical contraction, etc.

Dr. Shoemaker said he was not referring to those cases of extensive fracture of the orbit with marked displacements; the eyeball in these cases were better spoken of as dislocated

### Exophthalmos in Brain Tumor.

Dr. T. H. Weisenburg reported two instances of exophthalmos that he had observed in cases of brain tumor. One patient was a girl, aged sixteen years, who had a tumor of the thalamus in which there was bilateral exophthalmos with paralysis of associated ocular movement upward and to some extent to the right and left and downward. There was, besides, a downward deviation of the eyeballs. There was also excessive bilateral choked disk and other pressure symptoms. The tumor compressed the chorioid plexus, the velum interpositum and the veins of Galen, and Dr. Weisenburg thought that the exophthalmos was the result of a venous stasis in the orbit.

The second case was presented before this Section by Dr. de Schweinitz in the previous year, and was a patient with unilateral exophthalmos. At necropsy a tumor was found in the middle fossa back of the orbit, and although in the examination of the orbit Dr. de Schweinitz did not find pressure on the cavernous sinus, Dr. Weisenburg thought that in this case also the exophthalmos was the result of the venous stasis.

Dr. Weisenburg concluded that exophthalmos was present in many cases of brain tumor; that it was not the result of a lesion in any particular part of the brain, but that it only occurs in those cases in which there was in some way pressure either upon the cavernous sinus or its connections, thus causing stasis of the vessels in the orbit. He believed, also, that it might be of some localizing value, inasmuch as the exophthalmos was greater on the side of the tumor where the greatest pressure was exerted.

Dr. de Schweinitz said that the members of the Section would remember one of the cases referred to in Dr. Weisenburg's paper, concerning which he had made some remarks to the Section on a previous occasion, the patient having been demonstrated by him during life. Although at that time the exophthalmos was supposed by some of those who had examined the patient to be due to a growth in the orbit, he had been satisfied that such was not the case, and believed, as did Dr. Weisenburg, that an intracranial growth was present, and at the autopsy this was found, in the manner already described by Dr. Weisenburg. Dr. de Schweinitz had carefully dissected the orbit, which was perfectly free from any neoplastic formation, although its posterior portion presented a somewhat edematous condition, which doubtless accounted for the exophthalmos, although he knew of no reason why Dr. Weisenburg's explanation might not be equally acceptable, except that he could not find at the autopsy any indication that the cavernous sinus was pressed upon.

Dr. Wm. G. Spiller agreed with Dr. Weisenburg that exophthalmos might develop with a tumor situated in any part of the brain, and he further believed that a unilateral exophthalmos might indicate the side of the lesion. He called attention to the fact that some large tumors, for example, the infiltrating growths, might cause but little increase of the intracranial tension.

Dr. Spiller then cited a case history where thrombosis occluded the inferior petrosal sinus and a part of the cavernous sinus, and yet no exophthalmos developed.

### Keratitis Associated with Acne Rosacea.

After referring to the scant literature concerning the ocular manifestations of acne rosacea, Dr. Holloway cited the history of a female, aged twenty-nine years, who had come under his observation during the preceding year. There was a history of early menstrual disturbance and vague pelvic symptoms. The right eye presented an extensive grayish, superficial vascularized infiltrate situated in the lower portion of the cornea. The vessels coursed over the limbus and disappeared in the lower fornix of the conjunctiva, vision of O. D. 1/60. Later in the course of the disease a superficial punctate condition developed in the cornea above this infiltrate. The manifestations in the left eye were slight, a number of small phlyctenules being present along the lower limbus. Vision of O. S. = 5/10. Subsequently an excessive lymphangiectasis developed in this eye. The condition improved slowly, with several interruptions, and a high astigmatic correction gave a final vision of 7/7.5 + and 5/5.

The patient had had two previous attacks, the first over three years prior to the one above cited, and all of the attacks developed during a period of menstrual cessation incident to pregnancy.

Dr. Ziegler stated that he had seen a considerable number of these cases of corneal ulcer associated with acne rosacea, but did not think that we could isolate any symptoms or lesions that might be considered pathognomonic. They were simply cases of ulcerative keratitis, usually of the recurrent type, associated with lacrimal obstruction, and caused by intranasal lesions. He had always relieved them by rapid dilatation of the tear duct, correction of the diet, and treatment of the nose. The facial acne will frequently disappear as soon as free breathing is restored, as was shown in a case he exhibited before this Section some years ago. While the immediate cause of the ulceration exits in the tear duct, we should search for the underlying cause in the lesions that give rise to nasal obstruction and in the chemically irritating discharges that are associated with such conditions. Suboxidation is also an important factor in the etiology.

### Schiotz's Tonometer.

Dr. de Schweinitz exhibited Schiötz's tonometer and made a few remarks on his experience with the instrument, the value of which he thought was very great, serving not only to demonstrate raised intraocular tension when this was not certainly present by ordinary methods of examination, but valuable also to test the influence of iridectomy and other operations on glaucomatous eyes. The results of his examination of normal eyes had usually indicated a tension between 20 and 25 mm., and in no instance had he found the tension as low as 12 mm., as reported in Stock's recent analysis of 100 normal eyes, the tension of which had been measured with this instrument. He thought that very valuable results might be obtained with this tonometer in investigating the tension of eyes containing various lesions, for example, angiosclerosis, retinal hemorrhages, etc., eyes which frequently passed into a glaucomatous state, and he was about to pursue an investigation of this character.

T. B. HOLLOWAY,
*Clerk.*

# CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting of February 14, 1910. Dr. William A. Fisher, President, in the Chair.

### Bilateral Exophthalmos.

Dr. William H. Wilder: This man, a railroad employe, was in perfect health and had had perfect sight until about five years ago, when he noticed a beginning prominence of the left eye. A month later the right eye also became prominent. There was no pain or discomfort. The prominence increased in degree until the present condition ensued. There is a marked protosis and the conjunctiva is swollen from the exposure. There is no injury of the cornea. Two weeks ago the vision in the left eye was 20/70, in the right eye 20/100, and it is practically the same to-day. The veins of the orbit are swollen and varicosed; the lacrimal glands are palpable. In the left eye and also in the right is a mass which feels not unlike a gland. In the right eye is a beginning papillitis, with considerable swelling of the optic nerve head and a few blocks of degeneration in the nerve. The veins are about twice as large as the arteries. There is no swelling of any of the glands about the face; no pulsation; no bruit; so that pulsating exophthalmos can be ruled out. There is no edema of the face, so that there is no thrombosis of the cavernous sinus. The nose and throat are negative. The accessory cavities are negative. Transillumination shows the maxillary antrum and frontal sinus to be normal, although there is a little dullness in the upper part of the maxillary antrum, probably due to the thickening of the lower lids. A front view skiagram shows a prominence of the inner medial orbital wall, as if the ethmoid cells are pushed out into the orbit. There is evidently some sort of tumor mass in each orbit, so placed as to constrict the venous circulation and make pressure on the optic nerves.

It has been suggested that this is a case of leontiasis osseum, but if so it is not more than a localized leontiasis, because the skiagrams do not show any enlargement of any of the other bones. Or is it a peculiar and rare form of chloroma, or an atypical form of leukemia? In thirty-six such cases on record there is evidence of leukemia, but a differential count in this case is negative. It may be a case of Mikulicz's disease, but the absence of enlargement of the parotids and sublinguals makes this theory untenable. The case is probably one of enlargement of the inner wall of the orbit.

The only treatment pursued has been of alterative type. The man is taking sixty grains of potassium iodide three times daily. Holding the head down or pressure on the eyeballs does not increase the exophthalmos.

Dr. Beard suggested that the case might be one of slow-growing sarcoma, originating from the median sinuses of the head.

Dr. Cassius D. Wescott was reminded of a case he saw more than sixteen years ago. The patient presented the same appearance as Dr. Wilder's patient, and on opening the lids widely he found numerous tumors. There was one tumor over the inner canthus of the right eye about the size of the end of the thumb. It was anterior to the palpebral ligaments. Dr. Wescott removed from each orbit a number of small lymphoid tumors, which were examined by Drs. Hektoen and Le Count, and pronounced simply lymphoid tumors, because no other diagnosis could be made. About that time Dock, of Ann Arbor, reported a similar case, but he could not recall his final conclusions. He thought that the exophthalmos in Dr. Wilder's case was probably due to similar tumors, because palpation of the masses reminded him very strongly of his case. His patient lived a number of years after the operation, and there was no recurrence.

### Glaucoma.

Dr. Henry Gradle: Case I.—The child was first seen in June, 1908, with secondary glaucoma of the left eye, due to partial corneal staphyloma. Iridectomy gave complete relief for three days; then all the symptoms returned. Cyclodialysis was performed, with complete success. The corneal staphyloma flattened, but has not receded entirely. Vision is about two-thirds, with correction of a high astigmatism. The other eye was totally staphylomatous. In September, 1908, I did a Kuechler operation, letting out the lens. Still tension and bulging persisted. In May, 1909, I did a cyclodialysis, with decided improvement. Tension was reduced, but is still plus; however the eye has retained its shape.

CASE II.—This gentleman has almost complete loss of the vision of his right eye from simple glaucoma. On November 30th I did a cyclodialysis, partly to see how he would react, on account of the left eye, which was beginning to be glaucomatous. In ten days the tension went down. The eye became distinctly soft and now has normal tension. There are no subjective symptoms of glaucoma in the right eye. The left eye is functionally perfect, but the tension is plus, the pupil does not react, and there is a beginning excavation. I did a cyclodialysis on January 20th, and in ten or twelve days the tension was plus, questionably, and went to normal or even distinctly below. Since then it has been at least normal, or doubtfully above, but becomes subnormal under eserin, while eserin before operation made him more comfortable, but never caused a lowering of the tension.

CASE III.—This lady had an iridectomy done for simple glaucoma of the right eye seven years ago, with arrest of the disease until the present. For the last few months she has had slight symptoms of glaucoma in the same eye. The left eye began with obscurations a few months ago, tolerably well controlled by eserin. Cyclodialysis was done on January 14th on the left eye, and the woman is subjectively more comfortable. She has no obscurations; tension is distinctly minus under eserin. She has perfect vision under low illumination.

### Ophthalmoplegia Externus.

Dr. William A. Fisher presented an interesting case of this condition.

### Case of Pseudo-Glioma.

Dr. Willis O. Nance: Girl, 10 years old; presents in the right eye what for a better diagnosis might be termed a pseudoglioma. On dilatation, a whitish, yellowish mass can be seen in the vitreous chamber, occupying about one-fifth of its contents. She came to the Illinois Eye and Ear Infirmary on August 12, 1908, on account of a convergent strabismus. Her family history is negative. She had an attack of rheumatism when one year old; pneumonia at five. It was first thought that the case might be one of true glioma. There has never been a dilatation of the pupil or increase in the tension. The patient has been under observation for about eighteen months. There has been no increase in the size of the mass. The eye is slightly smaller than the other eye. Probably this is an old tuberculous process or possibly it is a metastatic growth. Vision is nil. Transillumination is negative. The tumor mass is distinctly vascular at one point.

Dr. Oscar Dodd thought that, considering the duration of the condition, it would hardly seem to be a glioma. He recalled a case of glioma with minus tension that gave every sign of a pseudo-glioma, although the pathologic report was positive. Long duration without marked increase in size and the fact of its vascularity led him to regard Dr. Nance's case as being a manifestation of tuberculosis.

Dr. E. J. Gardiner saw a patient who, following an injury, presented the same picture as this one. The man was hit in the eye with the brim of a hat. The eye became painful and two weeks after the accident a tumor with a few blood vessels spread over it was found in the vitreous. It increased in size for a while, and then became stationary, finally presenting the same picture as did Dr. Nance's patient.

Dr. Henry Gradle saw a case which was identical with Dr. Nance's and which he had seen for the first time twelve years previously. In 1897 a boy of twelve was blind in one eye. There was no pain or discomfort, but a white mass was clearly outlined, somewhat globular in shape, with vessels running over it. After consideration, it occurred to Dr. Gradle that it might be a case of cysticercus, and he advised removal of the eyeball, but the advice was not favorable accepted. Twelve years later the patient returned and the eye was in exactly the same condition as when first seen. The whitish tumor with blood vessels running over it was still plainly to be seen. There was some iritis and some synechiæ. In the other eye was an unusual form of retino-chorioiditis, which made the man practically blind. The question is: What is the connection between the conditions present in the two eyes?

### Case of Hess' Operation for Ptosis.

Dr. Mortimer Frank: The result in this case is excellent —better in the right than in the left eye, probably due to a tightening of the sutures. The ptosis was complete. There was no power in the frontalis. The deformity is congenital. His mother has a partial ptosis and the mother's father also had a ptosis. The late Dr. Hotz attempted an advancement of the levators on both eyes, without result.

### Trachoma.

Dr. Thomas Faith: The patient suffered from trachoma for seven years, during which time he was treated continuously without avail. Four weeks ago excision of the tarsus was advised. At that time the vision was shadows in the right eye and ability to count fingers at ten or twelve feet in the left eye. The excision was followed by no reaction, and the patient made a prompt recovery. Vision to-day is fingers at twelve feet in the right eye and 20/100 in the left eye. Instead of leaving the knots of the sutures in the cul-de-sac, they were brought through the lids and then over a strip of gauze.

Dr. Beard puts in four sutures, tying the two outer ones on the under surface of the lid and bringing the two central ones out through the lid margin close together. He considers that most of these combined excisions are made because of gelatinous degeneration of the tarsus, although Dr. Faith stated that there was none in his case. He was rather inclined to believe that degeneration was present, because of the good result obtained.

Dr. H. W. Woodruff has had some experience with this operation and has found that there are two advantages to be obtained. It not only improves the trachoma, but it relieves the ptosis. In one case he secured a particularly good result. A young girl with chronic trachoma had never had any treatment. Only one eye was affected and there was a pronounced ptosis. She had a pannus and some opacities of the cornea, but all she desired was to have the ptosis relieved. He performed this operation with a most gratifying result. When the refractive error was corrected, she had useful vision. He has never seen any bad results from this operation, although occasionally there is some reaction.

Dr. Faith, in closing, said that he had used four sutures in this case, bringing them all out through the lids and tying them over gauze. He has done the operation twelve times, but has not limited himself to cases of degeneration of the tarsus. He has employed it in every case of old trachoma that resisted ordinary measures. He regards it as a useful and safe procedure. In one case he had a recurrence in one eye. The trouble was in the cul-de-sac. The trouble over the tarsus amounted to nothing. It was the first operation of this kind he ever did, and perhaps the technic was faulty. The only thing to be careful about is to leave a little strip of cartilage along the border of the lid to preserve its shape. In one case he had used dionin for a long time to clear up the cornea, and he had also used jequiritol, and finally adopted this procedure, and the man, who had been unable to read for thirty years, could subsequently read a newspaper.

### Wound in the Ciliary Region.

Dr. George F. Suker: A boy struck his eye on the corner of a step, causing a corneal wound through which the iris prolapsed. A flaxseed poultice was applied and the boy was not seen by a physician for several days. Instead of enucleating the eye, Dr. Suker did a grafting operation—a modified Schoeler. At the present time, six months after the operation, the globe is in good condition and the patient has light perception. However, there is a phlyctenular trachoma on the conjunctival flap.

The second patient had a similar injury. The upper lid was split and there was a wound at the sclero-corneal junction, through which the iris, ciliary body and a portion of the chorioid were prolapsed. There was some escape of vitreous. An operation similar to that done in the first case was performed, but the patient later developed a corneal ulcer, necessitating a secondary operation to prevent perforation of the cornea. He is now tattooing the cornea, in order to get a good cosmetic result.

### Tuberculosis (?) of the Lid.

Dr. Major Worthington: About ten months ago the patient noticed a small pimple on the right upper eyelid, which gradually increased in size until it involved quite a portion of the lid. It has been growing slowly since then, breaking down and partially healing. It has partly destroyed the margin of the lid. At the age of fourteen the patient began to have abscesses in the neck which show numerous scars. These abscesses discharged for twelve years. A specific history is denied and the diagnosis lies between epithelioma and tuberculosis; however, the Moro tuberculin test was positive. Microscopic sections showed merely a round cell infiltration.

Dr. O. Tydings referred to a case of tuberculosis beginning in the right lower lid and extending across the bridge of the nose, which he treated with tuberculin injections, and which had gone on to complete recovery. The patient has not had any treatment for the past few months. A dermatologist in this city made a diagnosis of lues, but under specific treatment the patient got worse. She responded to the tuberculin test and entirely recovered under the tuberculin treatment.

Dr. Gardiner thought that this was a case of lupus.

Dr. E. V. L. Brown said that the scars in the neck confirmed the tuberculous nature of the trouble. At the Illinois Charitable Eye and Ear Infirmary a number of cases of blastomycosis has been seen, and there is a possibility that many of these cases go unrecognized. However, the scars in this case resemble neither those of blastomycosis nor lupus.

Dr. Suker stated that in the employment of the Moro ointment, the full strength, diluted with fifty per cent lanolin, is used, and therefore lanolin should be used on the opposite side of the chest, because this substance alone often gives a typical Moro reaction. The Moro reaction does not positively prove that the patient has active or even latent tuberculosis, but there may be a skin reaction of a tuberculous nature, although whether this is positive or negative remains to be seen. He suggested the use of Koch's tuberculin, and the noting of the results following its use.

### Melanosarcoma.

Dr. J. B. Loring exhibited a patient and called attention to a small pigmented growth on the left caruncle which has been slowly increasing in size. There have been no subjective symptoms. The growth first appeared about three or four months ago, and is extremely suggestive of melanosarcoma.

Dr. E. V. L. Brown stated that many of these tumors are now being regarded as epitheliomas rather than melanosarcomas.

## The Operative Treatment of Chronic Glaucoma Other Than by Iridectomy.

Dr. Charles H. Beard: Operative treatment of glaucoma began about 80 years ago with McKenzie's posterior sclerotomy. Thirty years later von Graefe did his first antiglaucomatous iridectomy. The operative measures which have followed are intra-bulbar and extra-bulbar. To the intra-bulbar operations, exclusive of iridectomy, belongs the various forms of sclerotomy (anterior and posterior), intra-ocular myotomy, and their numerous modifications. The filtration cicatrix was a modification of the anterior sclerotomy conceived by DeWecker in 1865. From this Panas in 1883 evolved his operation of ouletomie. In all of these operations paracentesis is doubtless the therapeutic factor and not the method of making the incision. They always give immediate and sometimes permanent relief.

Other forms of intra-bulbar operations involve both iris and sclera. They are combinations of sclerotomy and iridectomy (sclero-iridectomy), Terson; sclerotomy with incision of the iris (sclero-iritomy), Nicati; the internal irido-sclerotomy of Vicentiis and the sclero-dialysis of DeWecker and several other procedures in which the same principles are involved.

On the theory that glaucoma is the result of anterior retention belong the incisions of the irien angle and the various forms of iridodyalisis. Subconjunctival sclerocorneal fistula, produced by entanglement of the iris, was sought as a means of producing a filtration scar. To the same end trepanation of the sclera or sclerectomy has been performed on various parts of the globe.

Recently sclerotomy, either with or without iridectomy and with excision of a bit of sclera at the site of the incision, has been extensively practiced and excellent results reported by Holth, Lagrange and others.

Cyclodialysis seeks to establish a communication between the anterior chamber and the suprachorioidal space. Since it is a comparatively new operation (Heine, 1904), final judgment cannot yet be passed on it. Many good results are reported and also many complications.

*Extra-Bulbar Methods.*—Among these are ciliary neurotomy (1870) and the opticociliary neurotomy (1876) for eyes blind from absolute glaucoma. Also stretching and plucking out of the nasal or infratrochlear nerve and extirpation of the ciliary ganglion. Ablation of the superior cervical ganglion of the great sympathetic nerve was introduced in 1898.

Electricity in the form of the galvanic and faradic currents has been used with apparent benefit.

Massage, either alone or in conjunction with anterior sclerotomy, is used. When used alone it is with the expectation of dilating the excretory channels around the rim of the anterior chamber. When practiced in combination with sclerotomy it is for the purpose of retarding healing and making a more permeable scar.

Subconjunctival injections have been used for their supposed effect in restoring osmotic balance as well as their counter irritant and lymphagogue action.

All known forms of treatment (with the possible exception of the last) do not affect the cause of the morbid process, but seek only to relieve its most conspicuous symptom—hypertension. This seems to be best accomplished by means of a filtration cicatrix of moderate size and porosity, situated at the very outermost limits of the sclero-corneal junction, loosely covered by healthy conjunctiva, and without involvement of any part of the uvea. This is most easily obtained by a simple incision, followed by massage.

Dr. H. B. Young, of Burlington, Iowa, said that of all the operations named, it is claimed that Hancock's is the simplest. He has recently seen some very favorable reports. Pollak, of St. Louis, employed the operation in forty cases with great success. Four weeks ago a gentleman, fifty-nine years old, came to Dr. Young practically blind in one eye, the result of an acute attack of glaucoma. He wanted the eye enucleated. The speaker persuaded him to permit a less radical procedure. He had a very marked mitral insufficiency, which Dr. Young thought precluded general anesthesia. He did a Hancock operation, and in thirty-six hours the patient was relieved of all his symptoms. Then the trouble recurred and was worse than before. The speaker, in order to relieve him of almost unbearable pain, enucleated the eye. There was a history of an original injury to the eye, and although he could not elicit anything by transillumination which would indicate that there was anything except glaucoma, there seemed to be an intraocular growth. The pain was evidently very severe and uncontrollable and the limit of the patient's endurance had been reached. The question in his mind was whether he made the incision into the eye large enough. He thought the direction of the knife was correct, but in withdrawing it he might have clipped the zonule. The aqueous was lost at that time and even the vitreous presented. There was considerable hemorrhage, a large growth remaining in the anterior chamber. The eye will be examined microscopically and the findings reported later.

Dr. Gradle said that cyclodialysis possessed many advantages over other procedures and did not seem to be involved with much risk. If done successfully, it leaves the eye practically unmutilated and avoids much of the annoyance connected with iridectomy. His experience in chronic glaucoma has been small. One case of secondary glaucoma in a child was a complete success. He has since done the operation four times in similar cases, but too recently to draw conclusions of any value. Meller, one and one-half years ago, spoke of forty-two cases, but a few of which were simple glaucoma. Uthoff employs the operation extensively, with good results. Elschnig reported seven cases of infantile glaucoma, of which four were cured; 17 cases of simple glaucoma, with 11 cured by one cyclodialysis and two by a second operation. The others were not cured and were submitted to iridectomy, at least in part. In twenty cases of inflammatory glaucoma, thirteen were cured, two after previous unsuccessful iridectomies. All cases dated back at least five months. According to a report by Dr. Gradlegun, present assistant at Elschnig's clinic, he primarily submits every case of simple glaucoma to cyclodialysis, but the operation must occasionally be repeated, and is sometimes followed by iridectomy. However, a large proportion of cases of simple glaucoma are permanently benefited by a single operation of cyclodialysis.

Dr. Suker said that cyclodialysis was a very neat operation, and is indicated, with beneficial results accruing, in simple glaucoma. He has tried it in a number of operations, with good results, but in one case very disastrous complications were noted. The patient was a middle-aged man, who had a partial iridodonesis as the result of traumatism. He developed an iridocyclitis, which gave him an annular synechia. He proposed enucleation, but did not want to sacrifice the eye, and as he could not do a broad enough iridectomy he did a cyclodialysis, reduced the tension—which had been increased—and the pain for six months, but finally the eye had to be enucleated on account of secondary increase in the tension and hemorrhagic conditions. At the site of entrance of the knife he developed a scleral staphyloma, with prolapsed iris, ciliary body and part of the retina. The eye eventually had to be enucleated.

He could not say whether the mishap in this case was due to faulty technic or to complications arising from excessive increase in tension, the hemorrhages or adhesions of the iris to the capsule, in addition to the cyclitis that had existed and to the endeavor to go through the supra-chorioidal space into the anterior chamber, thus doing more damage than was necessary. This is the only case of the kind on record, and is, therefore, unique.

Basing his judgment on this case, he would regard this as a palliative measure in cases of this kind. When there are adhesions of the iris, with a crowding forward of the lens, cyclodialysis does not offer as good results as in simple, uncomplicated cases of glaucoma. He has tried it in two or three cases of inflammatory conditions, with good results, but had to do an iridectomy later. In two cases of simple primary glaucoma the tension is still down after a year.

Dr. L. N. Grosvenor stated that an examination of the eye removed by Dr. Suker showed the anterior chamber to be full of blood, the iris atrophic and adherent to the anterior capsule, the retina completely detached, coming straight from the disk to the back of the lens and over to the ora serrata. The staphyloma contained more or less blood. The inner surface of the retina was crowded out into the staphyloma, and from the lower lip of the wound across the middle of the sac to the outer wall of the sac, and then forward over the base of the ciliary body that had prolapsed, into the wound. The vitreous cavity was full of blood. Macroscopic section shows the sac.

Dr. E. V. L. Brown thought the cases for cyclodialysis should be chosen carefully. His experience in about twenty cases had been very satisfactory, but he thought that the cases to which the operation was best adapted were those of the chronic irritative type, especially those that were due to anterior synechiæ, with secondary glaucoma, rather than to the simple cases of glaucoma. In these cases the iris angle is not applied to the angle back of the cornea. He thought that the cases presented were instructive, but not conclusive as to the merits of the operation. He has sections made from a case seen in Meller's clinic, where the eye had to be later enucleated. The eye was lost, but it was a case in which iridectomy would have been of no avail. When the chamber is very shallow, iridectomy should be thought of after cyclodialysis. He said that Dr. Beard is mistaken as to the consensus of opinion as to the difficulty of the operation. It is really a simpler operation than iridectomy.

Dr. Beard, in closing, could see how cyclodialysis would be a simpler operation than iridectomy in certain instances. Where the anterior chamber is obliterated, one cannot do an iridectomy, but cyclodialysis is possible. Where an iridectomy is possible, he would rather perform it than a cyclodialysis. To enter the anterior chamber neatly, without disturbing the uveal portion of the eye, is a difficult undertaking, especially where there is a spur of sclera that protrudes at a point where the cornea and sclera join. The spatula is apt to run against that and enter the ciliary body, causing much traumatism of that structure.

Clinical meeting of March 21, 1910, held at the Illinois Charitable Eye and Ear Infirmary. Dr. W. A. Fisher, President, in the chair.

### Shortening of an Ocular Muscle by Tucking.

Dr. H. W. Woodruff exhibited several patients on whom excellent results had been obtained by an operation which he had performed in more than 50 instances. Dr. Woodruff makes a vertical incision in the conjunctiva only, and this is dissected from the capsule as far as possible. An opening is made with the straight scissors at the lower border of the tendon near its insertion, and the strabismus hook passes through this opening and under the tendon. This opening is then enlarged parallel to the lower border of the muscle, and a similar incision is made along the upper border of the muscle, so that the muscle is exposed as far back as possible. While the conjunctival flap is held out of the way by an assistant, a needle threaded with formalized catgut is passed from below upward as far back from the tendon insertion as possible. This is tied in the manner of Worth, including, however, muscle and capsule only. The needle, which now is under the muscle, is then passed through the tendon at its insertion very close to the sclera, from underneath the muscle, and outward. A similar suture is passed through the upper border of tendon and capsule. When these sutures are tied, a fold is produced in the tendon and capsule at its insertion in the sclera. The sutures should be tied in three knots to prevent loosening. The conjunctival wound is closed with silk sutures and a bandage applied. Anesthesia is secured by the instillation of cocain and the subconjunctival injection of cocain and adrenalin.

Dr. Gradle for several years has done an operation similar to Dr. Woodruff's in principle, but technically simpler. He splits the tendon horizontally for a length of 10 to 12 mm. from its insertion towards the canthus. Incising through the conjunctiva without dissection, the sclera is exposed in the wound and the muscle and tendon freed with a hook. A horizontal suture is placed under each longitudinal half of the muscle, one needle bringing it out through the tendon close to the sclera, while the rear needle penetrates from within outward, the belly of the muscle with all the tissue covering it. The distance between the needle exits depends on the intended shortening. The peripheral ends of the two threads are tied together, preferably over a miniature aluminum plate with two eyelets. If the two anterior ends of the thread are now knotted also over an aluminum plate the amount of shortening is regulated by the tightening of the loop. The tuck in the muscle spreads out laterally from the wound and is not very conspicuous. The objection of this simple and easy operation is its small effect. The threads have seemed to cut to some extent through the belly of the muscle, and the effect is not as great when healing is completed after seven days as when the thread is first tied. But the result obtained after the end of the first week has always remained permanent.

Dr. Richard J. Tivnen has seen Dr. Woodruff perform his tucking operation and has also used his method in two cases of his own. Judging from the results obtained, it would seem to be a very satisfactory operation. The technic is not more difficult than the Worth procedure and, with Dr. Woodruff's method of local anesthesia, the co-operation of the patient is easily secured in the majority of instances. The "lump" occasioned by the "tuck" is quite prominent at the conclusion of the operation, but it gradually disappears, and in no instance has Dr. Tivnen observed it remaining as a permanent disfigurement. As Dr. Woodruff remarks, the only difficulty is to place the sutures far enough back in the muscle. The instrument Dr. Tivnen presented is used by rhinologists, and it occurs to him that it might be so modified as to overcome the difficulty of inserting the posterior sutures to which Dr. Woodruff refers. Dr. Tivnen is having one made to conform to the modifications he has in mind.

### Recurrent Glioma.

Dr. W. H. Wilder presented a well-developed, apparently healthy boy of 3 years, who was first seen in the dispensary of the Illinois Eye and Ear Infirmary in July, 1908. The pupil of the right eye was moderately dilated and a grayish reflex was seen. Tension was normal. Diagnosis of glioma retinæ was made and immediate enucleation advised. This was declined, and the boy was taken to two other ophthalmic surgeons, who also advised removal of the eye. This advice was not followed, and the parents had the boy "treated with medicine" for a year, at the end of which time the little patient was again brought to the clinic with a large tumor protruding from the eyeball and orbit.

Complete exenteration of the orbit was performed, the bones being denuded of periosteum. The patient was then treated for several months with X-rays, and the orbit filled in nicely with apparently healthy granulation tissue. Two months ago signs of recurrence appeared, and at present a firm mass pushes the eyelids forward. The boy is bright and in good health otherwise, and gives no evidence of brain involvement. This mass will be removed and the bones scraped, and the X-ray treatment continued.

### Rapidly Growing Round-Celled Sarcoma of the Orbit.

Dr. Wilder also exhibited a girl 3 years of age, well-developed and nourished, who was first seen in the dispensary of the Infirmary December 15th, 1909. The right eye was reddened and protruded to a slight degree. The pupil was mobile and reacted to light. The movements of the eyeball were somewhat restricted. The history was that the eye was normal up to about two weeks before, at which time, when at play, her little sister had stuck a pair of scissors in the eye, causing a slight wound that bled but little. The next day the eye began to protrude.

Ophthalmoscopic examination showed that the fundus was normal. No wound could be seen in the sclera or conjunctiva. The swelling increased, and the patient was taken into the hospital December 29th 1909. The child developed a temperature of 101.6°.

The swelling increased so rapidly that in a few days the lids could not be closed and the cornea sloughed.

On January 11, 1910, or six weeks after the original injury, the right orbit was completely exenterated, the eyelids being left. The child recovered nicely and is still in good health. Histologic examination of the growth shows a large round-celled sarcoma.

### Bilateral Exophthalmus.

Dr. Wilder exhibited the man with bilateral exophthalmus who had been presented at the previous meeting. The marked exophthalmus existing was of five years' duration. The lids could still be closed, but the lower conjunctival fornix protruded. Skiagrams showed no bony growth.

Ophthalmoscopic examination revealed slightly congested retinal veins and a beginning optic neuritis in each eye. Vision of O. D. = 20/120. Vision of O. S. = 20/70. March 2nd, 1910, a Krönlein operation was done on the left side, and a large tumor, that did not involve the muscle cone, was removed from the orbit. Prompt recovery from the operation was marred by a furious facial erysipelas that developed the day after the operation, but with the subsidence of this it was noted that the swelling of the right orbit was very much less than it had been. As a result of the operation the condition of the left eye is improved. The optic neuritis seems to be subsiding and the vision of that eye has risen to 20/50. The growth is being prepared for examination and its nature has not yet been determined.

Dr. C. A. Loenheer: I am glad to see that Dr. Wilder did the Krönlein operation instead of the Halsted, of which he spoke at the last meeting. At that time I asked Dr. Wilder why he did not advise a Krönlein. His answer was very much against the operation.

My entrance thesis, presented and read before this society, reported an orbital tumor removed by the Krönlein method. The operation was not performed by me, but by Professor W. Schroeder, of Northwestern University Medical School, and he had no trouble in separating his osteoplastic flap and exploring all of the orbital cavity. The report of the laboratory was an hemangio-endothelioma. I would like to know the laboratory findings in Dr. Wilder's case.

### Tuberculous Ulcer of the Conjunctiva.

E. V. L. Brown: Mrs. J., aged 32, first noticed an ulcer on the left lower palpebral conjunctiva eleven weeks before I saw her, and stated that the lesion had changed little in that time. I found the lower left lid border thickened and, the inner half especially, diffusely red and tumefied to the median line. A saucer-shaped ulcer, involving half of the free lid border, Meibomian ducts and adjacent conjunctiva, lies 5 mm. to the outer side of the punctum; it is 3 mm. wide, 1 mm. deep, has a yellow-white smooth floor, and no undermined or indurated border; a more moist and superficial extension is seen at the temporal edge. The lid conjunctiva lateral to the ulcer presents 10-15 round or oval elevated, follicle-like nodes in the subepithelial layer; they are distinctly yellowish in color and often grouped in packets of 3-4 each. The intervening conjunctiva is considerably reddened and injected. The preauricular gland is swollen. Smears show numerous typical and atypical tubercle bacilli (Professor Harris, University of Chicago). The guinea pig into whose anterior chamber a piece of the excised tissue was placed was eaten by rats about two weeks after the inoculation and before any iris tuberculosis had developed; a diagnostic injection of 1 mg. of tuberculin gave a positive general and local reaction; no evidence of tuberculosis in other parts of the body could be found by Dr. Woodyatt.

The patient is now in her seventh week of a course of "Bacillen-Emulsion" subcutaneous injections, according to the revised recommendations of Hippel, recently published by his assistant, David, and the ulcer is smaller, but the follicles unchangead.

### Bilateral Primary Inflammatory Glaucoma; Tension Relieved by Cyclodialysis.

E. V. L. Brown: P. V., aged 59. The vision has gradually failed in each eye for the past five or six years. One finds total marginal glaucomatous excavations of both disks. In the right eye the tension is at the upper physiological limit; in the left the tension is + 1; the Schiötz tonometer reads R. 54 mm., L. 66 mm. Cyclodialysis was done on the right eye twenty-eight days ago and upon the left eye ten days ago and reduced the tension in each eye to normal, as tested by the fingers, and to 19 mm., by the tonometer, in the right eye. The left tonometer tension has not yet been taken.

### Glaucomatous Cupping of Both Disks With Amaurosis, Possibly Due to Methyl Alcohol.

E. V. L. Brown: F. P., aged 59. Three years ago the patient awoke one afternoon to find himself completely blind. The day before he had spilled a large quantity of wood alcohol down his leg, filling his shoe. He allowed his clothes to dry without changing them, but soon became dizzy and went home. He returned to work the next day, but again had to leave for home and go to bed on account of dizziness. Vision gradually improved, so that four months later he considered returning to work, but after seven months his vision had become as bad as it is now and has remained so. He has been under observation during the past year.

One finds the vision in each eye reduced to light perception, and light from any direction is projected into the temporal field. The pupils are about 6 mm. in size and almost fixed to light.

The disks are blue white and sharply outlined and are surrounded by a halo of glaucomatous chorioidal atrophy; the lamina cribrosa shows over a large portion of the floor and the vessels are of good caliber.

A complete and ampulliform excavation of the nasal halves of each disk is present. The difference in level between the floor and edge of the disk is 3½ D. on the right side and 2 D. on the left side. The scleral rings overhang the floor in more than one-half the circumference on each disk. The large vessels are all displaced to the nasal half and disappear beneath the undermined edge of the scleral ring, to reappear on its overhanging anterior surface. In the temporal halves the surfaces slope gradually up to the edge of the disk and the scleral ring is nowhere undermined in these halves.

The tension has been studied with special care. To the touch it has always seemed to be at the lowest border of the physiological limit. For seventy-five consecutive days it was studied with the Schiötz tonometer and was never higher than 14½ mm., although it has been as low as 8½ mm. Two weights were always used. We have, then, a so-called glaucomatous excavation of the nasal halves and an atrophic excavation of the temporal halves of each disk without demonstrable increase of tension.

Heinrich Mueller first held that the glaucomatous cup was caused by increased intraocular pressure. In cases of simple glaucoma it has been contended that increased pressure would be found if carefully sought for; but in this case I have been unable to find any increase for a period of two and one-half months in the third year of the disease. Schnabel believed that the increased pressure did not cause the cup and that it was due to a cavernous or lacunar atrophy of the nerve substance in its intrascleral portion, with subsequent fusion of the tiny cavernæ into one big cavern. Schnaudigl, Schmidt-Rimpler and Elschnig have reported the same type of atrophy in glaucoma. Yet the same cavernæ have been found in myopia by Axenfeld, Polatti and Stock. Furthermore, the cup has been seen to disappear when the increased tension was relieved (and even to return again with a second increase of tension) by Axenfeld, Czermak, Sachs and, indeed, by Schnabel himself. Schreiber reported a case of lacunar atrophy in a child dying with multiple sclerosis of the brain and cord with a typical total, shallow, saucer-shaped excavation of the disk.

What effect the wood alcohol may have had in the production of the glaucomatous excavation in this case I am unable to state. The history is typical of such a poisoning, but the retrobulbar neuritis and simple glaucoma may have been merely coincident. I can find no cases of ampulliform excavation of the disk involving either the whole of the circumference or a portion of the disk in the literature of toxic amblyopia.

### A Case of Argyrosis.

Dr. M. H. Lebensohn presented Mrs. D. M., Russian, 46 years old. Ten years ago, while living in Russia, the patient had smallpox. For the ocular involvement at that time she was given an eye wash, which she used 3-4 times daily for two months. She claims not to have used any local treatment since that time. Dr. Lebensohn first saw her three and a half years ago. The conjunctiva of each eye, including the palpebral portion, with the exception of a small triangular space at the outer canthi, was coal black. The vision of each eye was fingers at 6 feet, due to corneal opacities covering the entire cornea. Under the use of powdered dionin the vision was improved to 20/120 in each eye, but the discoloration is almost as marked as before. This patient was exhibited before this society about two years ago by Dr. Nance.

### Rupture of the Sclera.

Dr. Dwight C. Orcutt presented a man, aged 77, who on January 3, 1910, fell, striking his left eye on a chair post. He suffered extreme pain for two weeks, with practically no treatment. Thirteen days later the vision equaled shadows. Tension + 1. There existed a rupture of the sclera in the upper nasal quadrant 2 mm. from the corneo-scleral margin, with a prolapse of the chorioid and ciliary body. Four days later the wound was sutured with a mattress stitch, bringing a conjunctival flap over all. Owing to the adhesions it was necessary to remove a part of the prolapse. Tension persisted almost uninterrupted until the stitches were removed. From that time the tension steadily improved until at the present time, with a correction of his refractive error the patient has 6/9 vision and reads Jaeger 1.

### Sympathetic Ophthalmitis Following Cataract Operation.

Dr. Willis O. Nance exhibited a man of 31, who entered the Infirmary six months ago with a well-defined sympathetic inflammation of the right eye. He gave a history of having a cataract extracted from the left eye four months previously. This eye was absolutely blind and was enucleated, the patient was put to bed in a darkened room and from 130 to 160 grains of sodium salicylate were administered daily for several weeks. Within six weeks the eye was quiet. At the present time there is an apparent occlusio pupillæ; still the patient is able to count fingers at five feet. This is the first case of sympathetic ophthalmitis following cataract that Dr. Nance has observed.

### Sympathetic Ophthalmitis; Recovery With Useful Vision.

Dr. Nance also presented a man, 29 years old, who developed a sympathetic ophthalmitis last October, eleven years after a perforating ciliary wound. When the patient entered the hospital five months ago there was every typical symptom of sympathetic ophthalmitis. Enucleation of the "exciting" eye had been advised. Vision of the injured eye was 3/200 and of the other was 6/200. Under atropin, confinement in bed in a dark room and mercurial inunctions and later massive doses of sodium salicylate both eyes rapidly improved in five weeks, so that vision was 20/100 and 20/30, respectively.

### Penetrating Injury of the Eye With Some Unusual Complications.

Dr. Richard J. Tivnen cited the history of a patient who had injured the right eye with a knife two and a half years ago. The patient stated that the eye was never reddened, inflamed, painful or tender; the only discomfort experienced was an inability to see. He returned to school three months after the injury, and nine months later was compelled to leave school on account of "blurring of vision, black dots and cobwebs," affecting the left eye. The patient first presented himself, at this time for examination, fifteen months after the injury. There were no evidences of any irritation or inflammatory processes. Vision equaled the perception and projection of light; the globe presented a linear corneal cicatrix, 1 8 mm. in length, situated slightly above the pupillary areas, and extended from the outer limbus horizontally inward across the cornea. The iris was adherent throughout the whole extent of the cicatrix and its pupillary margin was drawn to the upper temporal quadrant; no posterior synechia. The pupillary reflexes were normal; the lens cataractous. Physical examination, von Pirquet's test and the urinalysis were negative.

*Left Eye.*—Vision 20/120; there were no external evidences of an inflammatory process. There existed a "brick dust" exudate in the vitreous, obscuring the disk; slightly below the macular region was a chorioidal patch, crescentic in form, one-half disk diameter in size and densely pigmented at its upper part. Complete rest of the eyes, potassium iodid in increasing doses and inunctions of mercury were ordered; the patient improved and returned to school. He continued in school for five months, when "spots and blurring" returned and he was again compelled to forego his studies. The previous treatment was resumed, with the addition of pilocarpine sweats. At the present time the vitreous is clearing and the patient is less distressed with "spots and blurring" of vision.

The nature of the lesion in the uninjured eye is the perplexing question in this case, whether it be a sympathetic process, consequent upon injury, or a periodic lighting up of an old chorioiditis.

Dr. Cassius D. Wescott stated that Dr. Tivnen's case recalled a report made some years ago by Dr. Ayres of Cincinnati of some similar cases, in which he asked the question: Is there a pseudo sympathetic ophthalmia? Without having an opportunity of making a further study of these eyes he was prone to regard this as a case of sympathetic ophthalmia and would enucleate the blind eye.

### Detachment of the Retina.

Dr. Emily H. Selby presented Mrs. M., aged 45, who had a detachment of the retina involving the inferior quadrant.

The case was of especial interest from the fact of its sudden occurrence. The patient suffered a severe headache, and after a brief period of sleep discovered that she could not see well with the right eye. When she consulted Dr. Selby the vision equalled 18-200. Dr. Selby questioned the advisability of operative procedure.

Meeting of April 18, 1910. Dr. W. A. Fisher, President, in the Chair.

### The Intercapsular Cataract Operation as Performed at Jullunder, India.

Dr. D. W. Greene, of Dayton, Ohio, addressed the Society on the above subject. The chief points in the lecture were as follows:

At Jullunder there are three operating tables and two sets of operating instruments in constant use. While one is being used the other is in the sterilizer. A silver speculum without a stop screw is inserted. The outer one-third of the eyelashes are clipped off as closely as possible, so that the knife will not touch them; then the end or heel of the speculum is caught with the fingers and the lids are lifted away from the globe, so as to completely expose the whole conjunctival sac, which is then flushed with 1 to 2 ounces of 1 to 3,000 bichloride solution; whatever remains is milked out (Smith calls it) by pressing down the outer angle with the thumb. The eye is then grasped at the lower corneal border with strong mousetooth fixation forceps, which take a deep hold, and the eye, if small, is lifted from the depth of the obit (this is easily done if the patient does not resist), and turned outward, so that the knife in its sweep across the anterior chamber shall not prick the nose when the counter puncture is made, but shall, rather, go over its bridge. The blade of the knife for this section should not be less than 1⅛ inches long, and 1¼ inches is better. It should be entered well back in the sclero-corneal junction, so that the section shall equal one-half of the circumference of the cornea. *This size of the section cannot be too much emphasized.* Entering the knife at an angle of about 20 degrees above the horizontal plane; in this position almost any knife will ride over the iris without picking it up, and the counter puncture can be made well back in the angle. As soon as the point of the knife emerges, if the eyeball is in proper position, the hand should be slightly lowered, and the knife pushed through to its heel, the inclination of the blade should be changed, so that the section shall be completed two millimeters within the cornea. This section should be a smooth and curved one, every plane parallel to every other plane. There will be no stairsteps such as result when the sawing motion is made. Primary union is the rule. Before the germs of infection can develop, the wound is closed. To this section the speaker believed the wonderful results at Jullundur are largely due. Dr. Greene thinks much of Smith's success is also due to the marvelous skill with which he can make this section, with marked uniformity, and deliver the lens without much pressure or bruising. He has not seen his equal in this or any other steps of cataract operating.

The iridectomy is the next important step. In an experience of 150 operations, before going to India, Dr. Greene became convinced that it should be made as small as possible. He takes a small hold of the iris and cuts it off at a right angle to the section, that is, cutting from below upward with the scissors, and not cutting it parallel with the section. A small iridectomy will permit the necessary drainage, and the pillars are not so apt to become entangled or prolapsed as when it is made larger; another reason for making it small is the tendency of the vitreous in certain cases and in certain nervous patients to balloon up and crowd the pillars apart and sometimes make the small iridectomy too large to look well, and lastly, the toilet will be much easier to make and the resulting coloboma much nearer the ideal keyhole shape.

The speculum is now removed and the assistant inserts the large hook under the upper lid and elevates and draws it outward in line with the axis of the orbit. The second, third and little fingers should press on the orbital ridge to help control the muscle, and with the left thumb he should pull down the lower lid.

The delivery of the lens in its capsule is the beginning, middle and end aim of the Smith operation. All other steps are preparatory to it, because whatever of merit it has and whatever place the future shall assign to it among cataract operations must ever hinge on delivery of the lens in the unopened capsule with a minimum of trauma. While the size of the section is all-important, because a large lens cannot be crowded through a small opening without danger of rupturing the capsule and bruising the parts, the size of the iridectomy also has much to do with the after-appearance of the coloboma. The speaker was convinced that the amount and direction of the pressure used to deliver the lens is of more vital importance, if possible, to the success of the operation than the size of the section. The section can be described so that one may imitate it, and make it large enough, but it is not possible to describe the amount and direction of the pressure necessary for the delivery of the lens, to one who has not seen it done. Sections will vary in size. Lenses vary and act differently in delivery. The strength of the zonula cannot be foretold. The escape of the aqueous often reveals a low tension of the globe that was not anticipated. All these are complications which no description can properly describe, but the harm which may result from any of them, experience and skill may obviate. To deliver an immature lens requires one kind and direction of pressure; to deliver an intumescent or a hypermature cataract requires an entirely different kind and direction of pressure. These manipulations are purely matters of technic, which can only be learned by seeing a large number of operations performed by one skilled in the method and then performing a large number of operations under his direction. The next important step is the toilet, which is of even greater importance to the future well-being and appearance of the eye than the toilet after the regular combined operation. The lens in its capsule is usually a much larger body than the same lens would be with its capsule and perinuclear layers or soft cortex left behind or pressed out ahead of the nucleus. Hence there is usually more crowding of iris pillars into the angles of the section. This must be replaced, if possible, and a small coloboma secured. Nothing except loss of vitreous should be allowed to defeat this purpose. During the delivery of the lens and completion of the toilet the patient must look well up, the position the eyes take in sleep. There is muscular relaxation and freedom from compression from the globe. Without attempting to be exact, the speaker suggested that he had seen as much loss of vitreous from the patient violating this injunction as from all the manipulations. Major Smith's teaching on this point alone is worth the trip to Jullundur. Dr. Greene thinks that any operator who will try this plan will be convinced of its superiority over old-time methods of having the patient look down while the lens is being delivered and the toilet made.

The steps of the toilet have lately been greatly improved at Jullundur. The speaker has recently written an article on this subject in the *Ophthalmic Record* of February, 1910.

As to the assistant, no man can do justice to the operation or to himself with an assistant who is untrained or unskilled. His duties are different from those of the operator, but they are not less important to the success of the operation. His duties may be briefly summed up. He must expose to view the whole operative field and take off all pressure from the eyeball. While the after-treatment of patients operated on by this method in India was very simple, practically nil it may be said, the same cannot be said of them in this country. For some reasons which were not clear to the speaker at this time, patients sometimes require considerable after-treatment. Inflammatory reactions are comparatively rare; therefore, it is very seldom indeed that patients complain of pain during convalescence, but their eyes become red. After the first dressing, the distinct pattern of the iris is maintained, showing its freedom from inflammation. In the vast majority of cases the condition seems to be one of irritation rather than of inflammation. The closing of the section has usually been prompt and firm. The speaker did not know that cases of slow closure have been any more frequent than after the old operation where the wound has reopened from coughing, straining at stool, or striking the eye, and the iris may or may not become entangled or prolapsed and the convalescence be prolonged. Dr. Greene has not yet compiled statistics covering this point. The question of the evils which may follow a loss of vitreous (often one-third its volume), if one may judge from the literature on the subject and from personal experience, seems to have been exaggerated. Delayed healing of the section sometimes occurs, but the same is observed after the regular operations. In this connection the essayist had only been able to diagnose one case of detachment of the chorioid in association with delayed healing, and that did no harm beyond the delay it seemed to cause.

The address was illustrated with lantern slides of the old and new hospital, patients, etc. The wards and immense verandas are a great feature in all oriental hospital buildings. There are as many beds on the verandas as in the wards. The operating rooms are as up-to-date as they can be in an oriental city of 75,000 people, where there are no waterworks, sewers or other modern necessaries. But the people have with great uniformity certain racial characteristics which probably have much to do with the success of the operation among them. It is rare indeed to see a native male or female, if an outdoor laborer, who carries a pound of superfluous flesh. The men are all tall, lean and lank. The women are not so tall, but are lean and lank and ugly. Gout and rheumatism are rare. Their meager vegetable diet probably has much to do in preventing these vices of civilization among them. These are the bane of cataract operating in this country. Syphilis was not often met with, and the Hindoos may be said to be temperate, and the Mohammedans are abstainers, so that these vices seem to be of but little importance as a contributing influence to complications during the healing process.

*Discussion.*—Dr. Thomas Faith asked whether the retarded healing which sometimes occurs predisposed to infection. Dr. Greene replied that if the section was not smooth and the edges did not closely coapt so that healing by granulation took place, there was danger of infection, but no greater than after the regular operation. He saw only four cases of infection in about 1,200 operations. This small per cent he thought was largely due to the thorough flushing of the conjunctival sac and to the smooth section which closes before the germs of infection can develop.

Dr. Oscar Dodd asked whether immature cataracts are all extracted by turning them over. Dr. Greene said that the immature cataract seldom or never turns over. The only lens which will turn over in delivery is one with a small nucleus and mushy cortex, which permits of moulding itself to the hour-glass shape. These are the intumescent and hypermature. A totally sclerosed lens cannot do this and is too large to turn in the limited space within the eye.

Dr. A. H. Andrews asked whether the women in India have cataract. Dr. Greene replied that they did, but in much smaller proportion than the men. The Sihks of the Punjab are magnificent specimens of physical manhood. They are the flower of the native army. They are tall, with plenty of bone and muscle, but do not carry a pound of superfluous flesh. The women, on the contrary, are small and ugly, and while they do work in the fields with the men, they are not so constantly exposed to the rays of the sun, as household duties require that they should be indoors a part of the time, and most of the women cover their faces a part of the time. No man except the husband and the children are supposed to ever see the face of the wife and mother, therefore the women do have a measure of protection from the glare of the sunlight not enjoyed by the men.

Dr. Oliver Tydings asked as to the nature of the toilet after the operation. Dr. Greene stated in reply that owing to the poverty of the people, the city of Jullundur was unable to pay for absorbent cotton and sterilized gauze, but as India is a cotton growing country, the people furnish it to the hospital. It is sterilized in the hospital and used in that way. The first dressing was removed on the third or fourth day, when we reached Jullundur, contrary to Smith's order, and occasionally wounds would spring open at that time because the dressers always asked the patients to look down. The vitreous might present and the iris become entangled in doing this. He has seldom had this experience, as he leaves the bandage on for eight or ten days and asks the patient to look up in dressing the eye.

Dr. W. H. Wilder asked if both eyes were operated on at the same time. Dr. Greene replied that they were and that he had never seen any harm come from it. He had seen in two cases one eye lost from infection while the other did well.

Dr. Henry Gradle asked as to the use of atropine. Dr. Greene replied that it is used only in those cases where the capsule had ruptured. These are the cases in which inflammatory complications are so likely to occur.

Dr. Wilder asked as to whether any attempt was made to determine the degree of visual acuity after the operation. Dr. Greene replied that no attempt was made, but all who wished it got a plus 10 D. for distance or a plus 14 or 16 D. for close work. Very few can read, so plus 10 D. was the glass that was usually given.

Dr. Willis O. Nance asked how the vision of the patients operated on in this country compared with that of patients operated on by the Major Smith method, and what was the degree of astigmatism following both methods. Dr. Greene replied that in India 80 per cent of the people have trachoma, and one would not get good visual results when the cornea was cloudy. Many of these patients do not do as well, but he did not know whether they differed much from patients operated on by other methods. In seventy-five cases reported by him last year he got very much better vision, an average of 20/40, by the capsulotomy method, and 20/27 by the Smith method. The patients were nearly all old men, average age 67, inmates of the Soldiers' Home. The amount of astigmatism depends almost entirely on the incision. If the Smith incision is correctly made, there is a low degree of astigmatism. This incision must be made with a knife blade one and one-quarter inches long; the regular von Graefe 1⅛-inch knife will do if it has not been sharpened too often. The incision must be a clean, straight one, made by a bold push and not by a sawing motion. The edges of this section coapt and seal up quickly.

Dr. Nance suggested that it seemed necessary to use considerable force with the hook on the cornea in order to express the lens, and that, therefore, abrasions or ulcers of the cornea might be apt to occur. Dr. Greene replied that he had never seen ulceration follow, although abrasion occurred formerly when the cornea was rubbed too much, but since he had learned the correct technic he did not have it.

Willis O. Nance,
*Secretary.*

# COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of February 19, 1910, in Denver. Dr. William C. Bane presiding.

### Operation for Advancement of a Lateral Rectus Muscle.

Dr. C. E. Walker furnished the following description, showed the suturing on a pig's eye, and presented cases upon which he had recently operated. Instill cocain (4%) three times, at intervals of a few minutes. Cleanse the skin and conjunctival sac with sterile warm water. Pick up the conjunctiva with rat-toothed forceps, and make an incision with strabismus scissors through the conjunctiva and subconjunctival tissue to the sclera, in front of the tendon to be advanced. and undermine towards the cornea. Cut through the capsule at the border of the tendon. Pass the smooth blade of Prince's forceps under the tendon and draw it towards the cornea. Then clamp the forceps and cut the tendon close to the sclera. Grasp with forceps the inferior rectus muscle, including the conjunctiva and fascia, about the middle of the insertion of the tendon. Introduce a full-curved needle, threaded with doubled silk, prepared according to Worth, in the direction of the muscle to be advanced. Pass the needle under the muscle to be advanced about one-fourth of the width of the muscle, penetrate the muscle, capsule and conjunctiva. The needle is then entered at the upper side and passed through the conjunctiva, capsule and muscle about one-fourth the width of the muscle from the upper border. Leave a loop of suture over the muscle. Grasp with forceps the superior muscle, including the conjunctiva and capsule, about the middle of the insertion of the tendon, then pass a suture through the tissue and pass it through the loop over the middle of the muscle to be advanced. Remove the needle. Cut off the required amount of tendon from the muscle to be advanced. Pull the suture and take up the slack (Howe's forceps are often of service), and make a double tie. Test the eyes and tighten the suture until the result that is required is obtained; then make a bow knot. Wash and bandage both eyes. Test and adjust the suture on the following day if required; if not, remove bow knot by pulling the end through, and cut off the ends of the suture. Keep the eyes bandaged for a week, dressing them daily. Remove the suture and keep eyes quiet for a few days longer.

Dr. Walker presented three patients upon whom he had recently advanced the internal rectus by the above method, for divergent strabismus. On February 1st he operated on a patient 23 years of age, showing 30° + of exotropia; on February 3rd, a patient of 15 years, with exotropia of 19° and hypertropia of 2°, and on February 14th, a patient of 17 years, with exotropia of 12°. In each case the result was exceptionally good.

### Partial Tenotomy of the Superior Rectus.

Dr. Walker also presented a patient of 55, upon whom he had done a partial tenotomy of the left superior rectus, on February 12th, for 7° of hypertropia; and another, aged 43, on whom he had done Worth's operation for advancement of the external rectus of the left eye, with tenotomy of both interni, for 25° of esotropia, December 18th, 1907, and partial tenotomy of the left superior rectus for 2° of hypertropia, February 17th, 1910. In both these cases normal vertical balance was restored.

### Extensive Wound of Ciliary Region.

Dr. D. A. Strickler presented a child of 4 years who, on January 7th, while running across the floor with an open toy knife, had fallen on the knife. The blade entered the eyebrow at the outer margin, glanced downward and passed through the tissues of the lid into the eyeball. The incision in the eyebrow extended horizontally 7 m. m. The incision in the eyeball extended from well back of the ciliary body, at about the junction of the middle with the upper third of the sclera, forwards and slightly upwards across the ciliary body, incising the cornea to the extent of 3 m. m. The full length of the incision was 12 m. m. When first seen, a few hours after the accident, the line of incision was widely gaping, black in color, and the anterior chamber filled with blood. He was put to bed and iced cloths ordered, and continued for several days. As the anterior chamber cleared of blood it was found filled with lens matter. The wound continued to gap widely, with occasional escape of aqueous, until the lens matter was partially absorbed; when it closed rapidly, leaving only a white line of sunken scar tissue. At no time since immediately after the accident had the patient indicated in any way that he suffered, nor had there been any redness or injection of the eye, ciliary or conjunctival. There had at no time been any prolapse of iris or ciliary body. The lens was now nearly absorbed and the eye perfectly quiet. The case was presented as one of extreme injury healing entirely without incident.

*Discussion.*—Dr. Sedwick had seen a similar case, save that the lens was not injured. The anterior chamber was full of blood, the iris and vitreous protruding. The prolapsed iris was pushed back, and the eye recovered from the severe injury.

Dr. Boyd said that a cut through the ciliary processes was far more dangerous than one between them.

Dr. Walker made the same comparison as to ciliary versus scleral wounds.

Dr. Jackson related a case of knife wound through the ciliary body and lens, with loss of sight; but no sympathetic irritation had developed after many years.

### Wrinkled Lens Capsule.

Dr. Strickler also presented a mechanic, aged 54, who had first appeared on December 27th, with a history of having been struck in the left eye by the end of a ⅝-inch bolt. The eye pained him at the time and for a few days thereafter; during which time it was red and inflamed. All signs of pain and redness had disappeared when first examined. Vision = fingers at five feet. With + 4 spherical = 20/200. A small central cut of the cornea, with posterior synechia at the outer margin of the pupil and a somewhat stellate opacity of the anterior capsule, was found The vision remained about the same. The case was presented because of the peculiar kaleidoscopic play of shadows noted in the lens when the head of the examiner was moved laterally, with a strong + lens in the ophthalmoscope. The shadows were entirely independent of the opacities.

*Discussion.*—Dr. Jackson noted that the iris was adherent to the capsule, that the radiating lines were of a round and wavy character, and believed that the capsule was wrinkled.

Dr. Black concurred in this belief.

### Unusual Lens Opacity.

Dr. Strickler also showed a woman of 63 who had presented herself on February 7th for measurement of her refraction. With the proper lens vision in each eye = 20/30. Upon examination of the right eye with the pupil dilated, a well-marked opacity of the lens, confined to the outer segment, was discovered. It was apparently of long standing, with rounded smooth margin, suggesting a stationary condition and good prognosis. The case was presented because of its rarity in Dr. Strickler's practice, and with a hope of enlightenment as to the probable causation and prognosis.

*Discussion.*—Dr. Wright thought the lenticular opacity was congenital, and similar to anterior or posterior polar cataract.

Dr. Neeper recalled a case with a simlar opacity, in which a complete cataract developed within a year.

Dr. Walker considered the localized opacity to be traumatic and thought that a complete cataract would supervene.

Dr. Jackson thought the opacity might be traumatic, that it was in the cortex and not spicular, and if unchanged in five years he would then say it was not senile. He had seen a similar case, due to a contusion produced by a whiplash during childhood, that showed no changes when the patient was between 80 and 90 years, and had probably remained stationary through life.

### Spontaneous Dislocation of Lens.

Dr. W. A. Sedwick showed a man of 65, with a history of senile cataract of the left eye of at least twelve years' standing and glaucomatous attacks in this eye requiring paracentesis twice in August, 1909. Examination in November had revealed a complete cataract. The correction of —5.50 spherical in the right eye gave V. = 20/30 +. On February 1st the patient stated that sight had returned to the left eye during sleep. Examination showed the cataractous lens to be dislocated downward and inward behind the iris, a small portion of its margin showing in the pupil. In the upper and outer quadrant of the pupil could be seen a delicate, opaque membrane, and the iris was tremulous. Dr. Sedwick raised the question of removal of the opaque lens, and as to whether or not it had been dislocated in the capsule; and if so, what structure showed the opacity in the upper and outer part of the pupil. No pain or inflammatory changes had followed, and no coughing or sneezing had preceded the dislocation.

*Discussion.*—Dr. Black stated that the integrity of the eye depended upon removing the dislocated lens without delay. The operation would not be difficult, and not dangerous if dacryocystitis was not present.

Dr. Boyd spoke of a patient who had good quantitative vision and a quiet eye for five years after dislocation of a cataractous lens.

Dr. Walker thought that the position of this lens, near the ciliary body, was unfavorable. He would remove the lens, if possible; and failing, might advise removal of the eye.

Dr. Jackson suggested removal, with the loop, through an upward incision.

Dr. C. M. Hosmer believed the cataract was hypermature, that the capsule had ruptured, and that the lenticular nucleus was dislocated downwards.

Dr. Sisson considered the opacity in the upper and outer portion of the pupil to be due to tags of capsule.

Dr. Libby stated, in reply to a question raised as to absorption of the dislocated lens, that he believed this very improbable, as it was calcareous in spots.

### Glaucoma With Cataract.

Dr. G. M. Wright presented a man of 68, who had lost one eye because of uncontrollable pain of glaucoma, two years before; and was suffering from posterior synechia, cataract and tension of + 1 to +2, in the other eye. The vision was reduced to light perception and projection in the nasal field. Eserin solution, 2 grains to 1 ounce, was being used. The pupil was small and the patient complained of no pain.

*Discussion.*—Dr. Black suggested the subconjunctival injection of 15 to 20 drops of 4-5% solution of citrate of soda, two or three times a week, according to the suggestion of Fischer.

Dr. Coover suggested posterior sclerotomy.

Dr. Jackson thought sympathectomy should be considered.

Dr. Neeper spoke of an effective iridodialysis of 5 to 6 m. m. in length, in a case which had been under the care of Dr. Patterson and himself.

Dr. Coover stated that he would go far back and tear off the iris, if he did an iridectomy.

### Corneal Papillary Growth.

Dr. G. F. Libby presented a coal miner, aged 60, with a growth 2 x 5½ m. m. and ½ to 1 m. m. thick, on the external corneo-scleral limbus of the left eye. It was papillary in character and extended obliquely across the limbus, with engorgement of the vessels running to the external canthus. The growth had first appeared two years before. It had always been painless, the patient only being conscious of it when viewing the growth in a mirror. R. V. = 4/5 partly, L. V. = 4/6 partly. Ophthalmoscopic findings and transillumination were negative. In the three months and a half that this patient had been under Dr. Libby's observation, the growth had not increased in size, although the vessels between it and the external canthus had become somewhat more engorged. A differential diagnosis between papilloma and epithelioma seemed both difficult and highly desirable.

*Discussion.*—Dr. Black would slice off the growth, and thought the microscope would reveal its nature. He had seen a similar case of two years' duration, which was attached to the cornea and conjunctiva. Careful dissection had been followed by good healing after a week.

Dr. Coover thought there was probably a foreign body beneath this neoplasm.

Dr. Neeper had seen a similar case of about two months' duration. On three occasions he had resorted to curettement and the application of a 50% solution of nitric acid. No foreign body was found, but the tissue of the growth, which was fully removed, was gristle-like. Healing was complete in two weeks.

Drs. Jackson and Bane thought the growth looked like an epithelioma, but Dr. C. M. Hosmer thought it had more the appearance of granulation tissue.

Dr. Walker would find the nature of the growth by the microscope; and if it were epithelioma, the question of enucleation of the eye would have to be decided.

NOTE.—The growth was subsequently curetted off the cornea and sclera, leaving the cornea perfectly clear. After eight days the corneal epithelium was restored, the engorged vessels resumed normal caliber and healing seemed complete.

Dr. J. C. Todd reported: "The tissue shows the histologic structure of squamous celled carcinoma. I have shown the slides to Dr. J. A. Wilder, who concurs in this diagnosis."

### Persistent Hyaloid Artery.

Dr. W. C. Bane presented a girl of 14 years, with persistent hyaloid artery in the right eye. The anomaly consisted of two vessels twisted on each other four times between the disk and the terminal point, six diopters into the vitreous. The upper vessel arose from the center of the disk, where it met and passed under the returning vessel, which was connected with the vein at the lower nasal margin of the disk. At the second turn the lower vessel passed under the upper one. The vessels were of the same size and color, and blood was passing through the loop. The vessels were about half the diameter of the lower nasal artery of the retina. The end of the loop floated in the vitreous. The vision of each eye was 20/15 with correcting lenses.

### Glaucoma Following Injury of Lens.

In the case of "Steel in the Vitreous," reported by Dr. Bane at the December, 1909, meeting, secondary traumatic cataract and glaucoma followed the operation of removal of the steel by the magnet. The foreign body had been removed through the wound of entrance in the lens, iris and cornea. Removal of the lens matter relieved the increased tension, and the eye soon become quiet. Good vision resulted, with the correcting lens.

### Sympathetic Ophthalmitis.

Dr. G. H. Strader reported the history of a boy of eight years, who had stuck a knife into his left eye November 10th, 1909. No trouble was noticed for three months, when both eyes became inflamed and vision blurred. Examination then showed a healed penetrating wound of the left eyeball at the upper corneal limbus, deep circumcorneal injection, tension minus, pupil secluded and occluded, light perception slight, with no projection. R. V. = fingers at two or three feet. This eye showed all the symptoms of severe plastic iritis, with annular adhesion of the pupil to the lens capsule. The cornea was very hazy from deposits on its posterior surface. A view of the fundus could not be obtained. The exciting eye was enucleated at once. Two hours later the patient was given 30 grains of soda salicylate by the rectum, and this dose was repeated every two hours until 120 grains had been given. The next day the right eye was markedly improved. Salicylate by the rectum was continued three days, after which 45 to 60 grains per day were given by the mouth. At the end of one week the salicylate was omitted. On the next day the eye was markedly worse. On two other occasions no salicylate or aspirin was given, and each time the eye promptly became worse. In addition to the salicylate he had, at intervals, inunctions of mercurial ointment and atoxyl hypodermically to the amount of about twenty-five grains. The eye became practically free from congestion. No salicylate had been used for 10 days, but three doses of 30 minims of a ten per cent solution of atoxyl had been given. V. = fingers at 15 to 18 feet. The pupil had a thin veil of exudate covering it, though this seemed to be clearing, and vision was improving. In all, this case had received an average of nearly 30 grains of salicylate and aspirin each day since December 13th. The boy's weight was about 60 pounds.

### Cryptophthalmos.

Dr. D. H. Coover exhibited photographs of a woman of 24 years of age and her child of 7 months, each showing binocular cryptophthalmos. Dr. Coover had removed the globe of one of the baby's eyes the day before, and found it the size of a hazel nut, adherent to both upper and lower lids. An exactly similar condition had been found in the mother, on whom Drs. Marbourg and Coover had operated 16 years before. The father's eyes were normal. Dr. Coover will report these cases in full later.

Meeting of March 19, 1910, in Denver. Dr. Edward Jackson, presiding.

### Outline of Ciliary Body by Transillumination.

Drs. H. R. Stilwill and E. O. Sisson showed a woman of 27, who had been suddenly attacked with severe pain in both eyes three years before, while sewing. The right eye became very much inflamd, vision gradually failing until it was now lost. At intervals pain had occurred in each eye; being worse during menstruation and while undergoing severe attacks of rheumatism. The vision of the left eye was 6/18 with — 4.00 spherical. There was no specific history, and the patient had four healthy children. Examination showed the right cornea to be generally hazy, with opaque spots below; iris muddy, with posterior synechia and irregular pupil; there existed an anterior scleral staphyloma, bluish in color, and more marked in the upper-outer quadrant. The left sclera was slightly bluish. Transillumination of the right eye gave a remarkable demonstration of the ciliary body and processes, which were outlined distinctly, as seen through the thinned sclera.

*Discussion.*—Dr. Patterson would test for tuberculosis, as most of the cases he had seen were tuberculous or had a family history of tuberculosis, and they had done best while resting and leading an outdoor life. While rheumatism was a factor in scleritis, tuberculous family history was the greatest factor. Total blindness was very rare.

Dr. Stevens considered the case one of deep scleritis, with total uveitis; and noted that transillumination showed more light through the sclera than through the pupil, which was blocked. He stated that scleritis was very common in Colorado, being due to rheumatism. His plan of treatment included sodium iodid, usually in small doses; atropin for the iritis and uveitis often present, or likely to follow scleritis; injections of normal salt solution, and instillations of dionin. He also advised outdoor life, abundant drinking of water, meat three times a day, and a free diet except starches, coffee, tea and alcoholic beverages. Tobacco, which raises the blood pressure, should also be interdicted.

### Cataract Treated by Discission.

Dr. Jackson presented a man, aged 41, in whom nontraumatic cataract had been treated by discission. When first seen, in 1904, there were extensive vitreous opacities in the right eye, and the iris was thin and discolored, vision = 4/25, lens clear. There was a history of uveitis several years previously. In September, 1906, there was a uniform gray opacity of the nucleus, vision = 3/150. In July, 1909, the eye had good light projection, with mature cataract. The patient desired discission. At the first operation a mere puncture was made in the capsule, causing no reaction. At the second an incision 2½ m. m. long was made, horizontally, near the lower margin of the pupil. This was followed by notable shrinking of the lens. The third operation was a free vertical cut in the capsule, 4 m. m. long. It was followed by breaking up of the lens, and removal of masses with moderate reaction. Absorption went on for two months, leaving a nucleus of about the size of the ordinary senile nucleus. In dividing this at the fourth operation the lens became wholly dislocated into the anterior chamber. Seven hours later there was dull pain in the eye, severe enough to cause nausea; the tension was plus 1, with ciliary tenderness. An incision was made in the lower margin of the cornea, and two-thirds of the broken up nucleus evacuated. Pain did not recur, reaction subsided after a few days, and two more needlings left a clear, black pupil, seven months after the first operation. Some scattered opacities remained in the vitreous; but corrected vision was 4/5. The left eye remained normal throughout.

### Localized Conjunctival Hyperemia.

Dr. W. C. Bane showed a woman of 18, whose right lower conjunctival cul-de-sac had been inflamed for three months and the left for three weeks longer. The lower half of each globe was involved, the upper half being normal. There had been headache and ocular pain. Vision was 4/5 with — 1.50 spherical, in each eye, and the fundus was normal. The xerosis bacillus was found. Instillations of 20% argyrol and inunctions of 3% mercurial ointment had given no help. Dr. Bane was not clear as to the diagnosis.

*Discussion.*—Dr. Patterson thought that angular conjunctivitis was suggested by the lower lids of this patient, but not by the upper. When argyrol was used it was difficult to recover the infecting bacillus. On the supposition of diplobacillary infection he would try zinc; preferring the salicylate to the sulphate of zinc. He mentioned the recent prevalence of pneumococcus conjunctivitis, in Colorado Springs, associated with the same infection of the nasal sinuses.

Dr. Ringle thought there was probably a sinus involvement, from the location and character of the pain.

Dr. Jackson considered involvement of the maxillary sinus probable, with extension of hyperemia to the margin of the orbit, thus affecting the lower cul-de-sac.

Dr. Bane had found no exudate in the sinuses of his patient; he attributed the pain to the intensity of the ocular disturbance, and questioned if the condition was not trachoma of the lower cul-de-sac.

### Central Guttate Chorioiditis.

Dr. Bane also presented a woman of 48, with a history of hay fever for two summers. The vision of the right eye was 4/4 — and of the left 4/15 +. The vision had been dim for six months. There had been no aching of the eyes or head The urine showed a specific gravity of 1010, with absence of albumin or sugar. The right eye showed small whitish deposits in the macular region, and in the left eye this condition was similarly located, but much more widespread, covering an area of 3 disk diameters. Dr. Bane had seen the same condition in persons of 60 and 70 years, respectively; the vision in both cases being below normal. He considered that all three cases belonged to the above classification, as pictured by Nettleship in his "Diseases of the Eye."

*Discussion.*—Dr. Patterson referred to a case history he had reported, showing similar retinal changes, under the title: "Notes Illustrating the Progress of a Retinitis of Presumable Rheumatic Origin" (*Ophthalmic Record*, April, 1907). He also mentioned another case that had previously presented a normal macula, but in which changes were now visible along the superior temporal artery, vision was only ½, and the color field suggested degenerative changes.

Dr. Jackson had seen whitish spots in renal or circinate retinitis, only; but had observed yellow spots with normal vision. He would suspect high blood pressure in Dr. Bane's case, from the narrow veins.

### Obstruction of Retinal Artery.

Dr. Jackson reported the case of a woman of 25, giving a history of temporary obscurations of vision, prior to an attack eleven months ago in which the right eye became entirely blind for a few minutes. Then vision returned for objects in the lower half of the field, but was permanently lost in the upper half. The inferior branch of the central retinal artery was about the diameter of the superior branch. The retina below the macula looked slightly pale, with several whitish dots scattered through it, and one black pigment patch connected with a small arterial branch. The field of vision was normal in the lower half. The upper portion was slightly narrowed concentrically, and presented an absolute scotoma a little above the fixation point, and gradually faded out to almost normal vision toward the periphery of the field. A small cilio-retinal artery ran to the macula. Central vision with correction equaled 4/4. Left eye normal.

### Removal of Steel in Vitreous.

Dr. E. W. Stevens reported a man of 36, in whom a splinter of steel had penetrated the cornea and lens, and lodged in the center of the vitreous. An X-ray picture, taken by Dr. S. B. Childs, located the foreign body. It was removed by a magnet, through the section usually made in the upper part of the cornea in removal of cataract. Pain, which resulted from swelling of the lens, was relieved by cold applications and blisters on the temples. The lens had protruded through the pupil, but was now receding and absorbing. The case was doing well. Later the lens would be extracted.

Dr. Stevens stated that he always had an X-ray photograph taken in cases of probable steel particle in the eye.

### Orbital Cellulitis.

Dr. Stevens also reported the case history of a woman of 18 with severe orbital cellulitis of the right eye and a temperature of 101° to 104°, that followed influenza. All the muscles of the right eye were paralyzed, but the media was clear, fundus normal, and vision good. There was marked chemosis of the conjunctiva, the lids were swollen and the eye was proptosed. In 24 hours the left superior and external recti muscles were paralyzed. The right ethmoidal and sphenoidal cells were removed, liberating pus, and the orbit was drained by an incision, aided by gauze. On the following day the temperature was normal. The swelling quickly subsided and the paralysis and exophthalmos disappeared. Dr. Stevens said that the case had seemed typically one of sinus thrombosis.

*Discussion.*—Dr. Patterson related a case in which drainage of pus from the orbit into the antrum, and thence into the nose, had brought relief.

### Orbital Infiltration.

Dr. Bane reported the case history of a youth whose right eye had been struck by a skate, 12 years before, cutting the lid and globe. Enucleation was promptly done. Because of the injured lid an artificial eye was hard to fit. The same eye had been worn 12 years. An infiltration of the orbit, resembling sarcoma, resulted. This mass was removed. Pathologic examination of the growth was made by Dr. J. C. Todd, who pronounced it composed of chronic inflammatory tissue. The artificial eye was devoid of its glossy coating and was rather rough.

### Ring Abscess of Cornea.

Dr. J. A. Patterson read a paper describing a case of peripheral annular infiltration of the cornea of an adult, which followed pneumonia and was coincident with herpes febrilis of the upper lip and lower eyelid. The article will be published in full elsewhere.

*Discussion.*—Dr. Ringle considered that a degenerated cornea was very vulnerable to infection, as were also herpetic eruptions. He had a similar case under treatment for ulcer of the cornea, with hypopyon and herpetic eruption, which was still in a critical state.

Dr. Jackson had an impression that ring abscess was a reaction to severe infection involving the whole cornea; all within the ring sloughing because choked off.

Dr. Stevens mentioned the case of an otherwise healthy woman, who had suffered from dendritic corneal ulcer following an herpetic bleb on the lower lid.

Meeting of April 16th, 1910, in Denver. Dr. E. W. Stevens presiding.

### Lacerated Wound of Cornea and Iris.

Dr. A. C. Magruder presented a man who had received a ragged wound of the right cornea and iris from an exploding oil gauge, August 13th, 1909. The iris was entangled in the corneal wound, and the lens was slightly opaque. Some of the iris was excised. The part entangled in the corneal wound below was liberated on the day of injury; that above resisted two attempts at liberation. At no time was glass discovered within the globe. The injured eye was now quiet, and its fellow had shown no sympathetic irritation. Cataract and both anterior and posterior synechia had resulted. The questions of a foreign body in the eye and subsequent probable behavior and treatment of the eye, were raised.

*Discussion.*—Dr. Black had long considered penetrating ocular injuries from exploding oil or water gauges relatively less dangerous than those from other foreign bodies, as the glass was sterilized by the heat. In Dr. Magruder's case he thought the good healing indicative of the absence of glass within the globe. If the eye became troublesome later he would remove it.

### Descemetitis.

Dr. E. T. Boyd showed an adult who had made a good recovery from a recent plastic iritis, under salicylates and atropin. There had been abundant deposits on Descemet's membrane. These had now disappeared, with the exception of a few minute, distinct but scattered points of exudate.

### Opacities of Lens and Vitreous, Associated With Myopia.

Dr. G. F. Libby showed a man of sixty-three, whose vision in both eyes had noticeably failed in the past four years. He had worn concave lenses since twenty years of age. In the past six years — 6.50 spherical in the right and — 8.00 in the left had been satisfactory for general use. Three months ago an optician gave — 10.50 in the right and — 13.00 in the left, which now gave the best vision obtainable, 4/30 in each eye. A posterior polar cataract and a diffuse nuclear haze was observed in each lens, and each vitreous was so obscured by floating opacities and general cloudiness that no fundus details were visible. Dr. Libby stated that the only possible hope of ocular improvement he could see lay in the detection of errors of elimination, circulation, or possibly an old specific infection; and that he should refer the patient to an internist for investigations along those lines.

*Discussion.*—Dr. Bane noted the swelling of the lenses.

Dr. Neeper thought the hyalitis accounted largely for the poor vision.

Dr. Hess suggested that this was a good case for extraction of the lens in the capsule.

### Pigmentation of Disk and Blindness Following Brain Lesion.

Dr. W. C. Bane presented a woman who had been affected by right hemiplegia, inability to express ideas, and by sudden loss of vision of the left eye, the previous August. Marked choked disks and tortuous retinal vessels supervened. The right eye recovered, but not the left. The paralysis gradually disappeared, but it was still difficult to get the correct word to express her thoughts. For a time the left radial pulse was not palpable. Degenerative changes in the left eye had finally resulted in a general pigmentation of the nerve head. The diagnosis was given as gumma of the left side of the brain. Treatment: Mercury by inunction and potassium iodid, 45 grains t. i. d.

*Discussion.*—Dr. Stevens called attention to Victor Horsley's recent paper, which located the optic neuritis on the side of the brain lesion; or, in case of both disks being swollen, the nerve on the side of the cerebral injury would finally show the more marked degenerative changes.

### Tabetic Optic Atrophy.

Dr. E. W. Stevens showed an adult with gray atrophy of both optic nerves and Argyll-Robertson pupils, with knee jerks present and station good. R. V. = 4/30, L. V. = 4/60.

*Discussion.*—Dr. Jackson believed the causative factor was syphilis, and thought that the reduced caliber of the retinal vessels suggested vascular disease.

### Corneal Ulcer.

Dr. Stevens presented a man with a sluggish central ulcer of the cornea and who had also suffered from a marked iritis. V. = 2/60. Under atropia, hot applications and leeching the ulcer was slowly healing.

*Discussion.*—Dr. Sisson suggested the intermittent X-ray to promote nutrition.

### Later Report of Removal of Steel From Vitreous.

Dr. Stevens also presented a case (reported at last meeting) from which he had removed a piece of steel from the vitreous, through a rent in lens, iris and cornea, by the use of a magnet. The eye was quieting, but the tension was minus, and the pupil was obliterated. The question of making an artificial pupil would be considered later.

*Discussion.*—Dr. Black thought this case was doing well. As posterior synechia had resulted he would consider freeing these adhesions so as to make better connection between the posterior and anterior chambers.

### Secretary's Report for Five Years, April 29, 1905, to April 16, 1910.

During the five years that your present secretary has served you, gratifying progress has been noted as to the quantity and quality of the work of this society, increased efficiency on the part of members, and a steady growth in its acknowledged contributions to ophthalmic literature.

While noting the increase in membership from twenty to twenty-six, it is pleasant to record that no loss has occurred either from removal, resignation or death, in the past five years. While some members have missed but one or two meetings in this period, it has happened that the Secretary alone has been privileged to attend every meeting. Of the last six meetings, the member from Leadville has attended all, traveling 3,000 miles for this purpose.

The tendency to read fewer papers and to make the meetings almost wholly clinical, has seemed to meet with general approval; as has also the increasing number of cases presented and reported.

It has been noticeable, not only that there have been more of the new members who have discussed cases and papers, but that all have entered more freely and frequently into the discussions.

In the first two of the past five years, two journals published reports of the proceedings of this society, while in the last three years they have added circulation by appearing in four.

Of books and journal articles published by individuals of this society, and from the society's proceedings, the editors of the *Ophthalmic Year Book* noted twenty-one contributions to general ophthalmology in 1905 and sixty-three in 1909.

The influence of the society has been successfully exerted to favor State legislation for the establishment of an institution for the industrial training of adult blind; for the revision of the school laws for the purpose of securing the recognition and correction of physical defects in school children, and to defeat a proposed optometry bill.

Two joint meetings have been held with rhinologists, to discuss the relation of diseases of the eye with those of the accessory sinuses, and a symposium on the ocular effects of alimentary, renal and cardio-vascular disturbances was conducted by ophthalmologists, neurologists and internists. The society appropriately observed its tenth anniversary last year.

Two foreign professors of ophthalmology, J. Hirschberg and C. Hess, and one holding an American chair, L. W. Fox, have been honored guests of the society; and Professor Hirschberg constitutes our only honorary member at the present time.

### Election of Officers.

Drs. G. F. Libby and Melville Black were re-elected as Secretary and Treasurer, respectively, and Dr. E. R. Neeper was chosen as Chairman of the Executive Committee for the ensuing year.

George F. Libby,
*Secretary.*

# BOOK REVIEWS.

## Diseases of the Eye.

By G. E. de Schweinitz, A. M., M. D., Professor of Ophthalmology in the University of Pennsylvania, Philadelphia. W. B. Saunders Company, Philadelphia and London. Sixth Edition, thoroughly revised. Price, cloth, $5.00.

The sixth edition of this well-known and tried text book on ophthalmology reflects brilliantly the care and thoroughness so characteristic of the author in his teaching and in all of his literary work. The reader finds himself in touch with ophthalmology as practiced, we might say, up to the day of going to press, and for reference he usually finds at once statements that are positive, or positively negative. Little space is given to the *discussion of theories*, but important theories are expressed in a brief and clear cut manner, easy to grasp and difficult to forget.

The present edition contains over nine hundred pages, three hundred and fifty-one illustrations and seven chromo-lithographic plates. Many subjects are introduced in special paragraphs for the first time, among which are the use of the crossed cylinder in refraction; obstetric injuries of the cornea; posterior scleritis; cyanosis of the retina; atoxyl amblyopia; the ocular complications of nasal accessory sinus disease; intermittent exophthalmos, and a number of operative procedures which would seem to have established for themselves a definite place in the ophthalmologist's store of resources.

We notice that the author is not yet ready to express his personal opinion upon extraction of the lens in the capsule, the operation as performed by Major Smith of India, and now being tried and advocated by a small number of men in this country. He very conservatively says: "If the operator desires to perform *extraction in the capsule* (*Major Henry Smith's operation*, also called the *Indian operation*) according to Smith, he may proceed as follows." Then follows a brief description of the operation from the *Archives of Ophthalmology*, and a few comments which are perfectly safe.

The reviewer sees wisdom and judgment in the manner in which the author has handled this particular subject, which has attracted so much attention in the last few years, and feels that his conservatism might at least postpone the loss of many eyes. Many of us are doubtless anxious to try our hand at this operation, but we still feel the need of authoritative backing nearer home than India.

While as a rule little criticism can be applied to the mechanical work of the publishers, we would suggest that new plates for many of the illustrations would be appreciated in the next edition.

William T. Shoemaker.

### Refraction and How to Refract.

By James Thorington, A. M., M. D., Philadelphia. Fifth Edition. Published, 1910, by P. Blakiston's Son and Company, Philadelphia. Price, $1.50.

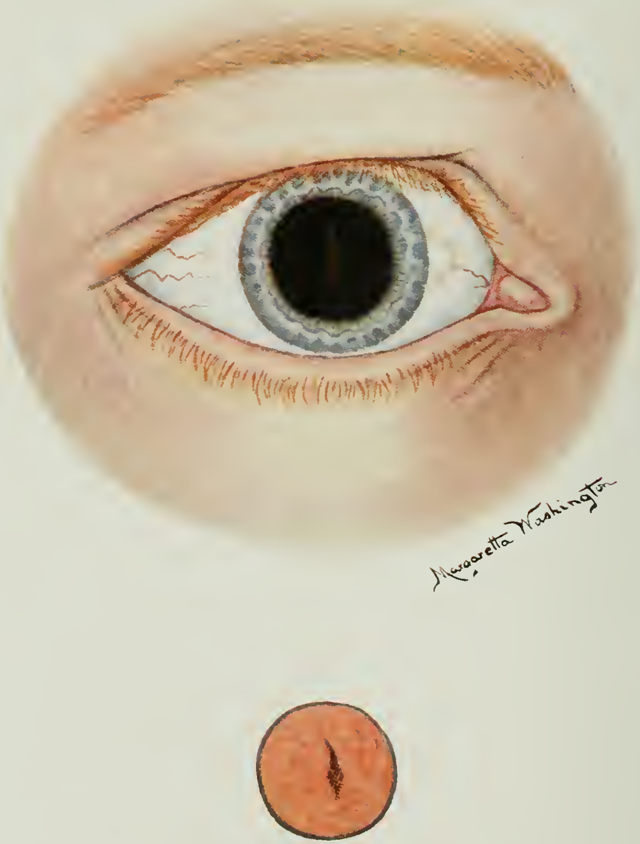
It is less than one year since we had the pleasure of reviewing the fourth edition of this popular work on refraction, and while there have perhaps been few if any important advances during this time in this particular field of ophthalmology, the author has, by the addition of forty-two new illustrations, the withdrawal of several which appeared in older editions, and the rearrangement of some of the text, improved his work and better adapted it for the uses of the reader.

Through the five editions the author has been consistent in keeping his book elementary and for the use of beginners in the study of ophthalmology, and for practitioners of medicine who have been imbued with the idea that they can be of most use as general specialists. For beginners in ophthalmology, and for those who will take a "look in" on *refraction* irrespective of ophthalmology, the book is excellent. The author's descriptions are for the most part brief, clear and practical, and follow one another in a well arranged and systematic manner.

As an example of the author's practical methods, we might call attention to the illustrations on pages 76, 77 and 78, in which are shown how the neighborhood may be bridled and made to subserve the uses of the refractionist who wishes to broaden his sphere beyond the narrow confines of his four walls.

Announcement is made that a translation of this work into Chinese is, by request, now under preparation, a tribute which must be very gratifying to Dr. Thorington, and for which he is to be congratulated.

William T. Shoemaker.



Congenital Pigmentation of the Cornea

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# CONGENITAL PIGMENTATION OF THE CORNEA.*

T. B. Holloway, M. D.,

Philadelphia.

While all cases of congenital pigmentation of the cornea are unusual, those cases conforming to the type first reported by Krukenberg in 1899 may be regarded as rare. Since that time several similar case histories have been reported in foreign journals, but to the best of my knowledge, the following three histories are the first to be published from American clinics:

Case 1.—M. G., female, single aged 32; no occupation aside from household duties. The patient first came to the eye clinic of the University Hospital, November 14, 1906, complaining of constant, dull, aching pain in each eye, aggravated by near work. Her family history was negative, and her own health had always been good, except for an attack of intermittent fever eighteen years ago. Her eyes were first examined for glasses eight years ago, when she consulted an oculist concerning the pain above referred to. There was no history of any ocular trauma or other inflammatory processes, and no muscæ.

The pupils were equal and round, while the pupillary reactions were prompt and normal; the ocular rotations were full in all directions.

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*Elaboration of the paper read before the American Ophthalmological Society, Washington, D. C., May, 1910.

O. D.—With the ophthalmoscope one could note an exceedingly faint, central, vertical linear opacity, and with a suitable lens a faintly granular condition of the streak. When examined by oblique illumination and the naked eye, this streak assumed a brownish tinge and was about 2½ mm. in length and ½ to 1 mm. in width. With a loupe it was seen to be spindle-shaped, and made up of an accumulation of very fine, quite uniform, golden-brown pigment dots, which were situated in the stroma of the cornea in the deeper layers, but their exact depth could not be accurately determined. About the periphery of the spindle the pigment dots were more isolated than centrally, where they were more compact. The overlying and adjacent portions of the cornea were perfectly clear, and the anterior chamber was of normal depth and free from any remnants of the pupillary membrane. The iris was dark brown in color and normal in every way, while the lids, lens, vitreous and fundus were likewise normal. Vision = 6/6.

O. S.—This was similar in every respect to its fellow, except that the pigment line was slightly more pronounced, and was just external to the center of the cornea. Vision = 6/12.

V. O. D. + .25 s. $\overset{\frown}{\smile}$ + .50 c. axis 30 = 6/4—
V. O. S. — .25 s. $\overset{\frown}{\smile}$ + 1.25 c. axis 180 = 6/5

I again examined this patient in July, 1909, and found the ocular conditions unchanged.

Case 2.—B. C., female, single, aged 32; housemaid. Owing to asthenopic symptoms, the patient first came to the Eye Clinic of the University Hospital in 1907. Her family history and past medical history were negative. As a child she was subject to styes, but there was no history of any ocular trauma. The first refraction of the patient was ten years ago, and she has been wearing glasses constantly since that time. She has four brothers and two sisters, and but two of these are wearing glasses.

On the nasal side of each cornea a pinguecula could be noted, but there were no evidences of pigmentation of this structure. The pupils were equal and the iris normal in character and responded freely to light; the ocular excursions were normal.

O. D.—With the ophthalmoscope one could note a vertical, centrally placed, spindle-shaped opacity, which presented a faintly granular appearance. With oblique illumination and the loupe the streak was seen to be of a golden-brown color, and the punctate condition was best noted about the periphery of the pigmented area, as in Case 1. The opacity measured 3 mm. in length and 1 mm. in width, and was slightly more pronounced than in the above case. The pigmentation was observed to be in the deeper layers of the stroma of the cornea, but here also it was difficult to determine its exact depth. The other portions of the cornea were perfectly clear; the anterior chamber was of normal depth, and no visible remains of the pupillary membrane could be seen. The iris was blue-gray in color, and, as above intimated, free from any synechiæ. The lids, lens, vitreous and fundus were normal. Vision = 6/9.

O. S.—This presented conditions similar to those found in the right eye. Vision = 6/7.5.

V. O. D. — 1.00 s. $\overset{\frown}{\smile}$ — .50 c. axis 120 = 6/6
V. O. S. — 1.25 s. $\overset{\frown}{\smile}$ — .25 c. axis 60 = 6/6

Since the above examination, this patient has been examined a number of times and as recently as one month ago, and no change has been noted from the conditions as described. (See colored plate.)

Case 3.—P. L., female, single, aged 40. This patient first consulted Dr. George E. de Schweinitz in February, 1901. She stated that she had always been myopic and had worn glasses for the past twenty-five years. Her past medical history and family history were negative. She denied any previous ocular inflammations or trauma.

O. D.—Here, as in the two preceding cases, there was noted in the stroma of the cornea a brownish, linear area, which upon careful examination was seen to be finely granular. Its position was just to the inner side of the center of the cornea and vertical in direction. The remaining portions of the cornea were perfectly normal. The pupillary reactions were prompt, and no abnormalities were noted in the anterior chamber, iris, lens, vitreous or fundus. Vision = 6/22.

O. S.—This was similar in all respects to O. D. Vision = 6/45.

V. O. D. — 3.50 s. $\overset{\frown}{\smile}$ — 1.00 c. axis 165 = 6/6
V. O. S. — 5.00 s. $\overset{\frown}{\smile}$ — 1.50 c. axis 15 = 6/5

This patient was again seen by Dr. de Schweinitz in 1905 and in June, 1909. It was upon this last visit that I had the privilege of seeing her, and was told by Dr. de Schweinitz that the condition had remained unchanged. The stripe measured 3 by 1 mm., and the pigmentation was slightly diffused along the lateral borders and more concentrated centrally. As in Case 2, the iris was blue-gray in color.

Krukenberg's[1] first patient was a neurasthenic and anemic woman, aged 45, who complained of muscæ. There was no history of any ocular inflammation, and aside from the pigmentation the eyes were free from any malformation. The patient was a high myope, the fundus of each eye showing a posterior staphyloma.

V. O. D. = — 9.0 s. = 0.6
V. O. S. = — 9.0 s. = 0.6

The corneæ were the seat of symmetrical granular pigmented areas, brown in color and vertically oval in form, which measured 4 by 3 mm. in size, and occupied the deepest layer of the cornea. The irides were chestnut-brown in color.

The second case,[2] a woman, also complained of muscæ. Aside from the pigmentation and myopia the eyes were perfectly normal.

V. O. D. = 5/66 — 5/36, with — 1.0 = 5/8
V. O. S. = 5/24, with — 1.0 = 5/5

There was no history of any past ocular affections. The pigmented areas were symmetrical, spindle-shaped, and vertically placed, brown in color and occupied the deepest layers of the corneæ. Centrally the irides were brownish, with a greenish tint in the periphery.

The third case reported by Krukenberg[3] was a woman whose corneæ revealed symmetrical pigmented areas in the deepest layers, which were spindle-shaped and vertical in direction, brownish in color and slightly granular. The area measured 3 1/3 by 4 1/2 mm. The eyes were myopic, and aside from a suspicious cupping of the disks, regarded as most likely congenital, the remaining ocular structures were free from abnormalities. The irides were dark brown in color.

V. O. D. — 5.0 s. $\overset{\frown}{\smile}$ — .75 c. axis 45 = 1.0.
V. O. S. — 6.6 s. = 0.2, amblyopic, due to early squint.

In 1901, Stock[4] reported an analogous pigmentation in a male, aged 60, although in this case there existed incipient cataracts, with vitreous opacities and myopic fundus changes. The right disk was pale, with contraction of the nasal field. The pigmented streaks were described as reddish-brown in color, finely granular, and formed a vertical spindle in the deepest layer of the corneæ. It measured 3 by 4 mm. in length and 2 mm. in width. The color of the irides was reddish-brown. The spindle in the left eye was slightly external to the center of the cornea.

V. O. D. — 15 D. = fingers at 1½ meters.
V. O. S. — 15 D. = fingers at 4 meters.

Stock also cites another case, which he regards as analogous to the above cases, but this will be referred to later on.

Thomson and Ballantyne,[5] in 1903, reported a similar pigmentation occurring in the cornea of a woman aged 22, who complained of defective vision. The patient was a myope, and the visual acuteness of the right eye was 5/60 and of the left eye 2/36. After correction of the refractive error the vision was 6/9 in each eye. Here, as in the preceding cases, there had never been any inflammatory condition of the eyes, except styes in childhood. The central portion of each cornea was occupied by a faint, brown, vertical streak made up of chocolate-colored dots. Below the center of the cornea the dots spread out like the tail of a comet, the central portions being denser than the peripheral parts. Thomson and Ballantyne state that the pigmentation was interstitial, but that it was difficult to determine its exact depth. In this case there was associated with the pigmentation a partial coloboma of each disk, but aside from this and the other conditions mentioned, the eyes were negative. The irides were light in color.

Finally, Kraemer,[6] in 1906, cited the case history of a nervous woman, aged 63, who had a bilateral neuritic optic atrophy, and came for examination because of failing vision.

V. O. D. = 5/18, + 1.25 c. axis 10 above and internally, = 5/6.

V. O. S. = 5/12, + 1.10 c. axis 10 above and internally, = 5/6.

The fields were concentrically contracted for white and colors. There was no history of preceding ocular disturbances. The pigmented spindle in this case, while it occupied the posterior layers of the cornea, was horizontal in direction, brown in color, and, in contradistinction to the other cases reported, the peripheral portions of the streak were more densely pigmented than the central portion. Kraemer does not give the exact size of the spindle, but states that it was 2½ times as long as broad. By oblique illumination, aided by a Hartnack lens, a kind of gray haze could be noted near the pigment granules, but this haze disappeared when examined by transillumination with the magnifying ophthalmoscope. The iris was dark steel-gray in color, and free from any pathological changes. As in all the preceding cases, no remnants of a persistent pupillary membrane could be found, and aside from the condition of the disks above mentioned the eyes were normal.

This case is unique in that it is the only one so far reported in which the spindle was horizontal. It differs still further from the other cases in that the pigmentation was more marked peripherally, and finally, it is the only one in which a suggestion of haze has been noted about the granules.

If we analyze the three case histories cited by the writer and the six histories previously reported and above mentioned, it will be found that in all the cases the pigmented area was bilateral, central in position, and occupied the deeper layers of the cornea, in contradistinction to some forms of acquired and congenital pigmentations of this structure that are superficial in type. In all of the cases the pigmented area was granular and the granules brown in color, although several of the reporters have seen fit to use qualifying terms. Thus, Stock referred to the color as reddish-brown; Thomson and Ballantyne have described the dots as chocolate-colored; and the writer has used the term golden-brown, and in doing so refers to the appearance of the more isolated peripheral dots as seen by oblique illumination. In all of the cases the lesions were practically symmetrical, although in Stock's case the position of the spindle in the left eye was slightly more external than in the right eye, and the same was true in Case 1, reported by the writer. With the exception of the case reported by Thomson and Ballantyne, who describe the lower portion of the streak as spread out like the tail of a comet, all of the pigmented areas were referred to as oval or spindle-shaped. Kraemer's case, in which the spindle was horizontal, was the only one that failed to show a vertical direction, and likewise the only one in which a haze was noted about the granules. Two of the cases had associated congenital defects. Thus, Krukenberg's third case had a congenital cupping of the disks, while a partial coloboma of each disk was present in the case examined by Thomson and Ballantyne. Two of the cases were associated with acquired conditions. Stock reports that his patient had incipient cataracts, vitreous opacities and extensive myopic fundus changes, while the right disk was pale, and the field was contracted on the nasal side. Kraemer's case had bilateral optic atrophy, with contraction of the fields for form and colors, for which no cause could be determined.

The size of the pigmented areas varied but slightly, the smallest mentioned being 2½ by 1 mm. (Holloway), and the largest 4 1/3 by 3 1/3 mm. (Krukenberg). The exact size was not mentioned in Krukenberg's second case, or in those reported by Kraemer, and Thomson and Ballantyne.

In view of the possible origin of the pigmented area, the color of the iris is of some interest. The first four cases reported (Krukenberg 3, Stock) all had brown irides, while in four of the remaining cases (Thomson and Ballantyne, Kraemer, Holloway 2 and 3) the irides were of lighter color. Thomson and Ballantyne state that the irides were light-colored throughout. Kraemer describes this membrane as having a dark steel-gray color, while in the writer's case the first had dark brown irides and dark brown hair, the second blue-gray irides and sandy-red hair, while in the third case this structure was also blue-gray in color, while the hair was auburn. It is thus seen that this pigmentation has been associated with the lighter shades about as frequently as it has with the darker shades of irides.

Finally, it seems well worth while to call attention to the refraction in these cases. Of the nine cases above referred to, two (Krukenberg 1, Stock) had high degrees of myopia, two (Krukenberg 3, Holloway 3) were moderately myopic, two (Krukenberg 2, Holloway 2) had low myopic errors, while in one (Thomson and Ballantyne) the refraction was stated to be myopic, but the amount was not mentioned. In Kraemer's case there existed a hyperopic astigmatism, while in the writer's first case the refractive error was approximately of the same character. In none of the cases was there a moderate amount of hyperopia, and in the nine eyes in which an astigmatism existed the axis was oblique in all but one eye. The vision obtained in these cases seems to be as good as one would expect to obtain in similar eyes without the pigmentation. After refraction all of the writer's cases had 6/6 or better, and none of them was aware of the existence of the lesion until it was commented on by the examiner.

As to sex, seven of the patients were females and two were males. Five of the patients were between 22 and 45 years of age, two were over 60, while the remaining two patients were adults, but the ages were not stated.

Since the first case of this type was reported all of the observers have regarded the condition as congenital. The history, position and general characteristics of this pigmentation would exclude the possibility of an acquired condition such as might follow the accidental application of certain chemicals, such as the anilin dyes, chromic acid, etc. In the same way could be excluded the staining from foreign bodies, or from the local instillation of drugs. The smooth and otherwise transparent cornea, free from evidences of previous vascularization, would also tend to eliminate the possibility of any acquired inflammation of this structure after birth. So, too, could be eliminated a pigmentation due to pathological processes elsewhere in the eye that are prone to cause deposits upon this membrane, or a pigmentation that might possibly result from intraocular growths or wounds, either accidentally or intentionally inflicted, such as have been described by Pier,[7] Bohn,[8] and others. Finally, there is no resemblance to the pigmentation recently described by Goldberg,[9] as occurring on the posterior corneal surface in elderly people, especially in the presence of cataract.

Thomson and Ballantyne, in the report of their case, based their opinion of the congenital character of the lesion upon the following conditions: (1) The symmetry was perfect; (2) the dots were all of the same size; (3) the dots were interstitial and not on the posterior surface of the cornea; (4) there were no indications of former inflammation; (5)

the eyes were myopic and presented a congenital anomaly of the disks.

This summary, with certain modifications already referred to in the above analysis, is applicable to all of the cases as a type, but it may be added that in the cases observed by the writer there was some variation in the size of the dots, and still further, Krukenberg and Stock were inclined to regard the pigmentation as occurring on the posterior corneal surface.

Up to the present time no definite and certain cause for the pigmentation has been determined. Krukenberg suggested the possibility that uveal pigment passed over into the corneal tissue at that time of fetal life when the pupillary membrane lies in close proximity to the cornea, but stated that it was difficult to explain that after the separation of these structures no trace of a pupillary membrane remained. At this point it may be well to refer to the early development of the cornea.

Kollicker[10] and Hertwig[11] state that after the closing off of the lens vesicle, the thin layer of mesodermal tissue separating it from the corneal ectoderm quickly thickens and subsequently this layer of tissue divides into two layers; the external one develops into the cornea proper, and the inner layer becomes the so-called pupillary membrane. It will be recalled that the more peripheral portions of the latter structure subsequently develop into the stroma of the iris. As the result of this cleavage of the mesodermal tissue, the anterior chamber is formed. Parsons,[12] in citing Jeannulatos, states that this cleavage begins as early as the sixth week.

Collins,[13] from his examination of a fetal eye in which the lids were just beginning to form, and in another of ten weeks, found in the posterior portion of the cornea a very delicate hyalin membrane, and immediately behind it two layers of cells with rounded nuclei. He regarded the more external layer as the endothelium of Descemet's membrane, and the internal as the commencement of the antero-fibro-vascular sheath of the lens. While no blood vessels were found among these cells, they were distinctly seen in the fibro-vascular sheath of a four-months-old fetus.

Lange,[14] in a human fetus of eleven to twelve weeks, found a well-marked peripheral chamber, while Jeannulatos[15] found that a complete cleavage of the mesodermal layer had occurred in a four-and-a-half-months fetus, and that the anterior chamber was of considerable depth and covered by endothelium which was continued on to the pupillary membrane.

According to Nussbaum,[16] the cornea is transparent from the beginning of the fourth month. Lange states that towards the end of the second, or the beginning of the third month, the anterior portion of the optic vesicle begins to thin and push forward from all sides in front of the lens vesicle. This thin layer of ectodermic tissue, with its pigment cells, then becomes associated with the more peripheral portion of the mesoblastic pupillary membrane to form the iris. Lange accepts the findings of Nussbaum, Heerfordt and V. Szily, and believes the sphincter and dilator fibers of the iris are of ectodermic origin. In a four-weeks-old fetus the same observer found that pigment granules were already present in the anterior part of the proximal layer of the optic vesicle.

Krukenberg felt that the similarity in color between the pigmented area and the iris stroma would tend to show some connection between the lesion and the anterior uveal tract, but offered no explanation for the vertical position of the spindle. Stock, while he accepted Krukenberg's suggestion as to the mode of origin, regarded the pigmentation as only an interesting anomaly, and in support of this cited the history of a 40-year-old woman with high myopia and gray irides, whose eyes revealed gray spots on the anterior capsule of each lens and a gray spindle-shaped opacity in the deeper layer of the cornea, which under oblique illumination was seen to be made up of fine dots.

Thomson and Ballantyne regarded the etiology as obscure, but stated that owing to the similarity of the cases the underlying cause was a definite and constant one. Kraemer fully accepted Krukenberg's suggestion and thought it satisfactorily explained the condition, and further stated that with the assumption of a firm union between the membranes, which could take place in any direction, the variable position of the spindle, in his case horizontal, could be explained.

Wüstefeld,[17] in referring to cases of this type, thought it possible that the separation of the pupillary membrane had been completely consummated, only leaving behind the pigment remains, and cited as a probable example of this his case of persistent pupillary membrane with adherence to the cornea, which showed a fine, curved, brownish pigment line situated between, and separated from the two pigment dots in the cornea, to which were attached the fibers proceeding to the iris.

Brückner, in his admirable and classic article on the pupillary membrane, states that if we think of the connection of the fibers with the posterior corneal surface (i. e., persistent pupillary membrane with adherence to the cornea) as broken and the fibers additionally absorbed, we have remaining the condition such as Krukenberg describes as melanosis of the cornea.

Parsons believes this anomaly is due to intrauterine inflammation, with transference of uveal pigment to the cornea.

This brings us to the interesting group of cases described as persistent pupillary membrane with adherence to the cornea. It will be remembered that two theories have been advanced in explanation of this condition, one of these being based upon an imperfect differentiation of the mesoblast, while the second attributes the condition to some form of keratitis, with or without perforation of the cornea. As to the latter theory, it is needless to say that in those cases where a purulent conjunctivitis was known to have existed in early infancy, the etiology of the adherence has prompted less discussion than those attributed to intrauterine inflammation. It is not my intention to enter into this discussion, but it may be well to refer to some data obtained from the reports of 23 cases,[18] taken from the literature on this subject, including the case observed in a cat and reported by Collins. The cases so far reported have been differently classified according to the views of the various authorities contributing to the literature of this subject, especially the congenital cases. The cases that have been classified as due to defective development have been those of Makrocki,[19] Vossius[20] (2), Collins,[21] Wüstefeld[22] (2), Rumschewitsch,[23] Schoute,[24] zur Nedden,[25] Polte,[26] von Hippel,[27] and Collins'[28] case that occurred in a cat.

Those classified as most likely due to inflammatory processes have been the cases of Beck, cited by Arlt,[29] Samelson,[30] Wintersteiner,[31] Gesang,[32] Zirm,[33] Schapringer,[34] van Duyse,[35] and Ballantyne.[36]

Of these cases those reported by van Duyse, Wintersteiner, Gesang and Polte all gave a history of a purulent conjunctivitis within a few days after birth. In Samelson's case a history of a severe ocular inflammation at the end of one month was elicited, while Arlt in citing Beck's case thought the condition was due to a perforation of the cornea, as accurate inquiry made it probable that the patient had had an ophthalmia neonatorum; Beck himself mistook the pupillary membrane for a vessel.

In Polte's case the other eye was atrophic, but owing to a coexisting ectopia of the pupil and malformation of the iris, the author regarded the condition as congenital. Brückner, however, thinks this case should be included with the inflammatory group. While Vossius regarded both of his cases as due to developmental anomalies, other observers have regarded his second case as due to inflammatory processes. Zirm, while accepting the inflammatory theory, states that in his case he could not definitely exclude the possibility of a congenital defect. Zur Nedden assigned his case to the non-inflammatory group, but Brückner thinks a post-fetal inflammation cannot be wholly excluded, and is inclined to assign this case to an intermediate position between melanosis of the cornea and persistent pupillary membrane with adherence to the cornea.

The case reported by Ballantyne was a seven-to-eight-months-old fetus, whose eyes were studied microscopically, and probably in a thoroughly literal sense should not be included here as a persistent pupillary membrane. This observer thinks Collins' case could also be best explained by the inflammatory theory, and intimates a similar possibility in several other cases usually regarded as due to faulty development.

Von Hippel, in *Graefe-Saemisch Handbuch,* 1900, stated that he believed all of these cases were dependent upon a keratitis, either intrauterine or post-fetal, and in 1901[37] published the case history of an infant six days old whose right cornea showed a parenchymatous opacity with a dull surface, but without loss of substance. The anterior chamber was shallow, and an anterior synechia extended from the pupillary margin to the posterior surface of the corneal opacity. Fluorescein produced a distinct discoloration of the affected corneal area. Two months later the corneal surface was smooth and the anterior synechia had disappeared. Associated with the conditions above mentioned, there existed bilateral symmetrical colobomata of the chorioid. The author pointed out the possibility of mistaking such a case, if seen at an appropriate time, for one due to a congenital defect. The infant had symptoms suggesting hereditary syphilis.

Schweigger,[38] however, was probably the first to point out the possibility of the development of an anterior synechia in interstitial keratitis without perforation of the cornea, due to swelling of the iris and narrowing of the anterior chamber. Later, in 1905, von Hippel[39] published the history of a case with microscopic examination, in which he concluded that the condition was dependent upon a defective separation of the mesodermal layer. This case had numerous other congenital defects, such as bilateral microphthalmos, irideremia, cataract, hair-lip, cleft palate, polydactylism, and defective skull formation. While he stated that an internal ulcer of the cornea could not be definitely excluded, he thought such an explanation highly improbable, in view of the absence of other inflammatory features, and in the presence of the associated anomalies.

Taking this group of cases as a whole, we find, as would be expected, that the majority of the cases came under observation in infancy or childhood. Only six were over nineteen years of age, the oldest being the case reported by zur Nedden, who was 57, and the next oldest case being Wüstefeld's patient, who was 36 years of age. Ballantyne's case was a fetus, while von Hippel's patient was but three days old, and an ocular examination prior to death could not be made. Half of the cases had anterior lenticular opacities, while a fewer number had associated congenital ocular defects, notably, the cases of von Hippel, Schapringer, Polte and Collins. About one-third of the cases had nystagmus, and this condition was associated with allied movements of the head in the case reported by Samelson; while in the four cases cited by van Duyse, Wintersteiner (2) and Makrocki, strabismus coexisted.

The fibers varied in number from one to twenty, and in the majority of the cases were pigmented. The course of these fibers was from the corneal opacity to the minor circle of the iris. In the cases of Zirm and zur Nedden, the fibers contained dark pigment, while the iris was of light color, and in Gesang's case there were pigment dots on the cornea, although the fibers were stated to be of the same color as the iris, which was blue-gray. Zirm's case, aside from the attached fibers, had four fibers projecting from the iris that terminated in free points in the anterior chamber, while Gesang's patient had one free ending fiber projecting from the cornea, aside from several attached filaments.

These cases suggest a condition reported by Brückner[40] which he regards as an intermediate stage between persistent pupillary membrane with adherence to the cornea, and the type of pigmentation of the cornea described by Krukenberg. In this case a pigmented fiber projected from the iris, and floated freely in the anterior chamber upon movements of the globe. Centrally, on the poserior surface of the cornea, were two small pigment dots, and from one of these a delicate gray fiber could be traced to the corneal border. The reporter thought that at an earlier period the pigmented fiber had been connected with the cornea. In this case there was no history of any preceding ocular inflammation.

Perhaps the most interesting feature is the pigmentation of the cornea that existed in some of these cases. The histories published by van Duyse, Vossius, Wintersteiner, Wüstefeld, zur Nedden, Gesang, Polte and Collins, as well as the case of Brückner, just referred to, all revealed some pigmentation of the cornea, which was usually in the form of a few discrete dots, or in small irregular patches. The pigmentation in Collins' case (cat) was described as irregularly circular in form, while in Wüstefeld's case there was a pigment stripe along the under border of the corneal opacity. However, in none of these cases, whether the origin was attributed to defective development, or to the results of inflammation, was the pigmentation analogous to that seen in the cases observed by the writer.

Four of the cases of pupillary membrane with adherence to the cornea above cited have been examined microscopically, those of Wintersteiner, Collins, von Hippel and Ballantyne, to which may be added Collins' case, where the condition was observed in a cat.

It is interesting at this point to refer to the observations of Rumschewitsch[41] on the anatomy of persistent pupillary membrane. He believes the persistence is the result of an abnormal development, which prevents an atrophy such as occurs in the normal pupillary membrane, and as the resultl of microscopic study of the structure he found it to consist of blood-vessels whose walls were composed of endothelium and adventitia, the vessels were connected by a transparent structureless membrane; a few very long spindle cells were found. Between the vessels were round cells similar to the cells of the vitreous humor. Pigment cells occurred very rarely, and only in that part of the membrane which was nearest the iris. Rumschewitsch also refers to the previous microscopic examinations of this structure and states that van Duyse found blood corpuscles in but one of the vessels contained in the membrane.

Von Hippel[42] states that the essential difference between the persistent and the normal pupillary membrane is the extraordinary firmness of the connective tissue in the former and its abnormal pigmentation, as well as the fact that the vessels are almost always free from blood. He also calls attention to the fact that the greater part of the pigment in the stroma of the chorioid and iris appears after birth, and states the same condition may apply to the pupillary membrane. Brückner states that many remnants in the new-born undergo a fast absorption, and if they become persistent in some cases it may be in consequence of secondary changes.

Hirschberg,[43] in reporting a partial disappearance of a persistent pupillary membrane that he had had under observation for eighteen years, states that in those cases that come under observation soon after birth distinct changes can often be noted within a short time, but in those cases that are seen later on, the majority fail to show any essential change. For further consideration of this question, the reader is referred to Brückner's article, where elaborate data will be found bearing on this subject.

The literature contains a number of cases showing a series of dark-brown or blackish excrescences about the margin of a perfectly free pupil, the so-called congenital ectropion of the uvea (traubenkörnen), which occurs normally in the iris of the horse. Colsman,[44] Ancke,[45] Spiro,[46] Hirschberg[47] and others have reported cases of this type. Ancke referred to the bilateral character of the condition, but later Spiro reported a unilateral case. Holmes[48] has cited a similar condition, and in the left eye one of these small excrescences was attached to the iris by a delicate, thread-like pedicle, the small mass moving in the anterior chamber upon rotations of the globe. One of Ancke's cases had a parenchymatous keratitis at the time it came under observation, which is interesting in view of Schweigger's observation on the formation of anterior synechiæ without perforation of the cornea, for it suggests how the freely moving mass in Holmes' case might readily become attached to the posterior surface of the cornea under favorable conditions, just as van Duyse regarded a placque of persistent pupillary membrane as having been glued to the posterior corneal surface.

In 1906 Herbst[49] reported the history of a case somewhat analogous to those cited above, and regarded its origin as due to defective development. In each eye about the periphery of the pupil there existed protuberances from the pigment layer of the iris. In the right eye a brownish-black cord extended from the posterior surface of the pigment layer of the iris and curved about the temporal margin of the pupil without attachment to the anterior face of the iris and was inserted on the posterior surface of the cornea. The insertion point and adjacent pigmentation formed an area irregularly round in form. In the left eye a similar cord proceeded from the nasal pupillary border, hung over the lower portion of the iris, with its end free in the anterior chamber. Opposite its point of origin, on the posterior surface of the cornea, was a pigment spot. Herbst thought the fiber had originally been attached to the cornea and was broken, probably through mechanical causes. By oblique illumination the corneal tissue was found unchanged. He did not regard the pigment cord as a remnant of the pupillary membrane, and stated that a perfectly satisfactory explanation had not been found, although he believed the condition congenital, and suggested the possibility of its development early in intrauterine life prior to the establishment of the anterior chamber, or that the overgrowth of the pigment layer had occurred after the completion of the anterior chamber.

Bock,[50] in 1888, published the case history and microscopic examination of an eye that showed a freely moving pigment mass in the anterior chamber, associated with short black excrescences that projected from the pupillary border. There also existed some pigment deposits upon the anterior surface of the lens.

Apetz,[51] Businelli,[52] Troitzki[53] and others have also cited cases of freely movable bodies in the anterior chamber, that of Apetz being attributed to a pigment mass detached from the anterior surface of the lens, where remnants of a pupillary membrane existed. Here was noted a pigmented ring with a clear center that corresponded in size to the pigment mass. In Businelli's and Troitzki's cases the bodies were cystic and were removed and submitted to microscopic examinations.

There is another type of deep corneal pigmentation that was first described in 1902 by Kayser, and was believed by him to be congenital, but the history of a subsequent case cited in 1908 by Salus probably places this type among acquired pigmentations. Kayser's case was a young man who had had multiple sclerosis for five years, and there was no history of any ocular inflammation or trauma. The superficial and middle layers of each cornea were clear and transparent, and there was no vascularization of this structure. About the whole periphery of each cornea was noted a greenish-brown discoloration, leaving a central oval area perfectly clear. Upon more minute examination it could be seen that this pigmentation was made up of fine yellowish spots situated in the deepest layers of the cornea, the spots being largest and more compactly grouped at the most peripheral portions of this membrane. Aside from this the eyes were perfectly normal, with full visual acuteness. The patient, as well as the reporter, regarded the condition as congenital.

In 1903, Fleischer[54] reported two similar cases. The first case was a male, 29, who for one year had had a pseudosclerosis. There existed a slight blepharitis of the lids, while the left eye was amblyopic, the result of a convergent squint. The pigmentation corresponded in color and position to that cited above, and formed a band 1 mm. broad about the periphery of the cornea. The second case was a male, aged 31, whose left eye had been enucleated as the result of a sloughing keratitis. Here the same type of pigmentation was noted in the right eye, and aside from the chronic blepharitis there were no alterations in the eye or its appendages. This patient had had symptoms of multiple sclerosis for two to three years. Fleischer emphasized the association of the pigmentation with multiple sclerosis, but was doubltful as to their direct relationship. Still, he stated that the possibility of an acquired condition could not be excluded.

Salus,[55] in 1908, reported a further history of a male, aged 32, who had had symptoms of multiple sclerosis for some years. The patient had been examined in the clinic in 1902 and 1905, and only normal conditions were recorded, but when examined in 1908 each cornea presented a pigmentation analogous to that observed in the earlier cases. In the right eye there was also a yellowish brown discoloration of a pinguecula, and close by two reddish-brown spots attributed to hemorrhages from the peripheral vascular network of the cornea. Salus regarded the condition as acquired, and thought the imbibition of the coloring matter by the cornea was dependent upon a slow filtration from the canal of Schlemm, the hemoglobin being changed to hemosiderin. He thought this filtration was probably brought about through innervation disturbances.

Senn[56] referred to the fact that the patient whose history was reported by Salus was a dyer, and he thought the pigmentation was probably analogous to cases previously observed and reported by him as occurring among anilin workers. Salus, however, pointed out that in his case the pigmentation differed from that described by Senn, not only in the color of the pigment, but also in that it was annular in form and occupied the deeper layers of the cornea. While three of the four cases of this type have been associated with multiple sclerosis, and the fourth with pseudo-sclerosis, the direct relationship between the sclerosis and the ocular condition still remains to be conclusively proven, although it must be admitted from the cases so far reported that the evidence points toward such a direct connection. Multiple sclerosis is a condition observed much more frequently in foreign clinics than in those in this country, and being a disease which would naturally bring the majority of the cases under ophthalmoscopic examination, it is difficult to see how this pigmentation could be overlooked. Hence, we can only conclude that if the pigmentation is dependent upon the sclerosis, it must be regarded as a most unusual manifestation, as would be indicated by the number of cases so far recorded. Personally, during the past two years I have carefully watched for any suggestion of this condition among the various forms of sclerosis that have come under my observation at the Orthopedic Hospital and Infirmary for Nervous Diseases, and have gone through the wards of the Philadelphia General Hospital, but as may be surmised from the rarity of the condition, my search has been a futile one.

Before leaving the cases of deep corneal pigmentation, it may be well to refer to two cases of more than passing interest. The year following the report of Krukenberg's first case, Weinkauff[57] cited the history of a male, 60 years of age, who had a myopia of 2 D. and who had contracted an initial lesion of the tongue one and one-half years before. The cornea presented vertical, granular, brownish streaks on the posterior layer in conjunction with vitreous changes and chorioiditic foci. Weinkauff thought it probable that the finely granular streak was dependent upon a form of chronic cyclitis, although he stated that the deposits on Descemet's membrane in such cases were always on the lower parts of the cornea, with a tendency to triangular arrangement. Stock, on the other hand, called attention to the fact that Weinkauff did not see his patient prior to his specific infection, and that no previous similar condition has been observed as the result of such an inflammatory condition.

Fisher[58] has described an interesting anomaly where the whole anterior surface of the iris presented a ragged and irregular appearance associated with the appearance on the posterior surface of the cornea of a narrow crescentic strip of pigmented iris tissue, most marked on the periphery of the cornea. The pupil was slightly excentric, but the iris produced normal pupillary reflexes; no pupillary membrane existed. The condition was attributed to an imperfect separation of the iris and cornea, and it is interesting to note that the instillation of a mydriatic produced a rise of tension which Fisher attributed to the blocking of the approaches to the canal of Schlemm as the result of the imperfect separation.

All the types of pigmentation so far mentioned have concerned the deeper corneal layers, and in conclusion the writer wishes to refer briefly to congenital superficial pigmentation of the cornea.

Westhoff,[59] Steiner,[60] Kraemer[61] and others have reported cases of this type. In Westhoff's case the fine pigment infiltration of the corneal epithelium was associated with pigmentation of the lid margins, caruncle and conjunctiva. In Kraemer's case there existed in the right eye a brown, crescentic pigment spot, 2½ mm. long and 1½ mm. broad, which was parallel to the upper and outer portion of the limbus, and was situated in the upper layers, the epithelium over it being smooth and reflecting. More minute examination showed it to be composed of fine dark-brown pigment granules. Steiner's cases were observed among the Javanese and were associated with trachoma, but the reporter believed the pigmentation to be independent of this affection. The pigmentation occurred as round dots, ½ to 4 mm. in size, and were situated in the upper layers of the cornea. The conjunctiva revealed similar pigment spots. In one case, where a portion of the pigmented lesion was removed for microscopic examination, the area of the incision still revealed pigment. The section was found to consist of epithelium, the uppermost layer of which was devoid of pigment, but in the deeper layers brownish-black granules were abundantly found lying between the cells.

Yamaguchi[62] has described a corneal pigmentation that he observed in a pair of pig's eyes that existed as a transverse band without connection with the pigmented limbus. Microscopically the pigment was found only in the epithelial layer, especially in the basal cells, and in the more external layers between the cells. Yamaguchi concluded that the same specific activity of the cells to form and collect pigment, which under physiological circumstances is congenital to the cells of the limbus epithelium, also pertains exceptionally to an isolated group of corneal epithelial cells.

Several cases of acquired pigmentation in the deeper layers of the cornea may be here mentioned, because they are unique and might possibly be mistaken for congenital conditions.

Mules,[63] in 1901, reported the history of a patient in whose eyes were observed interstitial, symmetrical, triangular, grayish-brown opacities, the apices being directly toward the pupils. The deposit was considered to be one of earthy salts beneath the corneal epithelium, due to a local stasis of the fluid normally circulating between the corneal layers. It was only after the opacity had encroached upon the pupillary area, and an attempt was made to remove it by curetting, that the actual position of the opacity was determined. In the other eye a sclerotomy knife was passed beneath the opacity, and it was removed with the superimposed uninvolved cornea, but unfortunately no microscopic examination was made, or at least reported. Mr. Critchett[64] has referred to a similar case.

Klein[65] has described a unilateral central brown pigmentation of rounded form that occupied the deepest layers of the cornea. Two delicate gray streaks extended from the pigmented area to the angle of the anterior chamber. Owing to its density and central position, the vision was much reduced, but except for the cornea the eye was normal. The condition was supposed to have existed four years and developed spontaneously. Klein was not able to determine whether the pigmentation represented a congenital anomaly, perhaps a nevus or a neoplasm (sarcoma).

In reference to the three case histories personally reported above, I can only state that I have no new theory to present to account for the origin of the pigmented spindle observed, but believe that microscopic studies will be necessary to throw additional light on the obscure etiology of this condition.

Finally, I desire to express my appreciation of the courtesy extended by Dr. G. E. de Schweinitz for the privilege of reporting these cases, and especially for his generosity in placing at my disposal the clinical data of the third case.

*1819 Chestnut Street.*

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# THREE CASES OF ACUTE GLAUCOMA TREATED WITH SUBCONJUNCTIVAL INJECTIONS OF SODIUM CITRATE.*

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In the January number of the *Annals of Ophthalmology,* I read with much interest the article on "The Relief of Glaucoma Through Subconjunctival Injections of Sodium Citrate," by Drs. Thomas and Fischer of Oakland, Cal. Shortly before, a woman aged 80, came with the following history: Four years previous she had undergone a combined operation for cataract of right eye, after which she could see fairly well. For past three days she suffered from severe pain in and about that eye sufficient to prevent sleep. Examination showed vision limited to light projection, cornea hazy, pupil large and keyhole shaded, fundus unrecognizable, marked tenderness over eyeball and plus tension. The diagnosis was simpler than the therapy. I had already put her on myotics and a broad iridectomy had been done, so that little could be looked for in these directions. She was put into the hospital and a further trial of heat and myotics, with codein for pain, given. The next day produced no change. With Thomas and Fischer's paper fresh in mind, I injected about 8 m. of a 4.5% solution of sodium citrate under the conjunctiva, after instillation of a few drops of cocain. (In the original article "a 1/8 molecular to a 1/6 molecular solution was used. Expressed in per cent, the former is equivalent to a 4.05%, and the latter to a 5.41% solution of the ordinary sodium citrate.") In as much as there seemed to me in reading the paper, no indications as to which strength to use, I struck a happy medium and employed a 4.5% solution.

The immediate effect was an increase of pain, with a smarting sensation, which lasted about two hours. Twenty-four hours later I again saw her and was agreeably surprised to see her smiling, up and about. She had slept without any opiate, had absolutely no pain, tenderness reduced to a minimum, and plus tension had ceased. Myotics were continued, but she left the hospital after five days without other medication. Vision improved to reading fingers at 6 feet, about what she said she could see before the attack (she was an illiterate). Ophthalmoscopic examination showed the presence of a secondary cataract, which prevented a satisfactory view of fundus. If her history can be believed, this was her first attack and her operation had been uneventful.

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Case II.—Mrs. F., aside from hyperopia for which she wore glasses, never had any eye trouble. On March 5, 1910, she fell down stairs, sustaining a Pott's fracture. On the evening of the 6th, felt pain in left eye, which became constantly worse. I saw her at 6 p. m. on the 8th, and she had not slept for 48 hours. Pain excruciating, cornea steamy and anesthetic, anterior chamber shallow, ciliary injection marked, tension plus three (I really believe this was the hardest eyeball I have ever felt), vision limited to forms at 2 feet, and fundus unrecognizable. At 8:30 p. m. I injected a 4½% solution of sodium citrate, as in case I, and likewise the initial effect was an increase of pain, which continued until 11 o'clock. Then with the aid of codein gr. ¼ and aspirin gr. 5, she slept until 7 a. m., with a short break at 4 a. m. Of course myotics and heat had been administered from the first. At noon on the 9th, I saw her again and found her happy, headache slight, still some pain in eye, but quite bearable, tension decidedly less, and she could make out objects across the room. Had I not seen case I, I would hardly have believed it possible for such a remarkable change in so short a time. On the 10th she saw fingers at 8 feet, improvement continued and she slept without the aid of opiates. On the 13th, the fifth day of treatment, the fundus could be made out for the first time, and although not perfectly clear, I could see there was no cupping of the disk. Anterior chamber was normal and tension equal to that of the right eye. She was discharged eleven days after my first visit with an apparently normal eye, fundus clearly seen, and able to read with her old correction as well as before the attack. The only after-treatment was aspirin and pilocarpin.

Case III.—Mrs. H. came to the clinic with an acute glaucoma on March 18th. Pain in right eye severe enough to prevent sleep, cornea steamy, deep ciliary injection, anterior chamber shallow, pupil enlarged and oval, tension plus 2, vision limited to fingers at 4 feet, and fundus not to be seen. She was put to bed and routine treatment administered. I saw her next on the 21st and saw no change. Injected sodium citrate as before, with the same results. Report shows pain abated in about two hours, and she slept all night without opiates. Thus she continued to improve, with only pilocarpin and aspirin, until the 25th, when I thought I detected a slight rise in tension. In as much as she insisted upon going home, another injection was given. She was seen again in a week, when she could count fingers at 20 feet, the fundus could be clearly made out and was apparently normal, while pain, tenderness and increased tension had entirely disappeared.

In none of these cases was I able to take the field of vision before treatment, and only roughly in cases II and III afterwards. In these, the fields were practically normal, for white, at least.

Thomas and Fischer explain the action of the salt as follows, which will be given in their own words: "Glaucoma is essentially an edema of the eyeball, and for its production we must hold responsible the same circumstances which are responsible for a state of edema in any other part of the body. According to the studies of one of us, edema represents nothing but a state in which the affinity of the tissue colloids for water is increased above what we are pleased to call normal. This is brought about, in the main, through chemical changes in the tissues themselves, whereby substances, particularly acids, capable of increasing the affinity of the tissue colloids for water, are either produced abnormally in the tissues or stored in excessive amounts. The various neutral salts are capable of counteracting the effect of acids in increasing the affinity of colloids for water, but some salts are more powerful than others. Sodium citrate is among the most active in this regard, and this constitutes one of the reasons for its choice in our clinical studies. A second reason is that this salt does not favor the formation of corneal opacities."

As to these explanations, there is nothing to be said, as I have no facilities of verifying or disproving them. But it seems plausible that, following some law of osmosis, the concentrated salty solution outside the sclera attracts enough fluid from within the globe to reduce the increased tension. By thus removing the pressure from the spaces of Fontana, it allows these to resume their function and the filtration angle to be restored. This is exactly what we strive to do in the use of moytics or an iridectomy.

The writer is keenly aware that three cases successfully treated by one method can carry little or no weight, nor is its adoption urged to the exclusion of operation or other recognized treatment. However, its use does not preclude a successful operation later, if deemed indicated. Moreover, as it allows the anterior chamber to become deeper, it really simplifies the iridectomy incision. The only untoward effect noticed was an ecchymosis at the site of injection, which disappeared in a few days.

The remedy is simple of application and readily obtainable anywhere and at any time. There always will be cases not suitable for immediate operation; for instance, those seen at night, in flats or in the country with poor lighting facilities, or patients suffering from other affections rendering operation undesirable or even contraindicated. As in my list, case I was an old woman, who had an iridectomy, and case II was in bed with a fractured leg. While an operation was possible, it would have been decidedly inconvenient and annoying to the patient. She lay in an inside room on the top floor of a three-family house, and to operate would have necessitated her being carried down at least one flight of stairs, and she weighed 160 pounds. In case III, the family objected to operative interference, although, had I insisted, I might have obtained consent.

And last, but by no means least, if it do nothing more than relieve pain, which it unquestionably does in two to three hours (a pain which baffles any but dangerously large doses of morphin) and renders a few hours' sleep possible, it will still be worth all that is claimed for it.

In conclusion, the writer feels an apology is due for reporting only three cases to support a method of treatment, but with the original author's five, it really places eight cases on record. Moreover, our results are so strikingly alike that there must be something more than mere coincidence. My material, too, is limited, and it is hoped that by bringing it to the attention of those with ample clinical facilities, subconjunctival injections of sodium citrate in acute glaucoma will receive a thorough and impartial try-out.

Note.—Since reading the above paper, case II came to my office, five weeks after her attack. Fundus seemed perfectly normal, cornea clear, tension normal, but pupil slightly larger than the unaffected one and somewhat oval. Vision with — 0.50 cyl. @ 180 was 20/20. Had no pain whatever and felt perfectly well. Because of the slightly larger and oval pupil she was given physostigmin sal. ½% sol., to be used twice daily.

*1872 Washington Ave.*

# TRAUMATIC ENOPHTHALMOS: REPORT OF A CASE.*

ALBERT C. SAUTTER, M. D.,

PHILADELPHIA.

Traumatic enophthalmos may rightly be considered a rare ocular condition. In the Leipzig Eye Clinic, in sixteen years only four cases were observed among about one hundred and fifty thousand patients, and if the cases be excluded in which a displacement of the eye occurred into one of the adjoining cavities, only about eighty cases have so far been reported.

The case about to be reported should therefore be of interest, especially as it was possible to obtain satisfactory skiagraphs of the orbital region. The history of the case is as follows:

Last July, during a baseball game in which he was participating, the patient, J. C., aged twenty-four years, was struck by a foul ball in the right frontotemporal region. He was felled to the ground, but did not lose consciousness. There was some bleeding from wounds above and below the eye, and the patient went to a hospital in Norristown, where the eye was bandaged. He subsequently returned to the game and played through several more innings, until he became sick at his stomach and was compelled to stop playing. On his return to Trenton, his place of residence, he consulted his family physician, and on July 30th, 1909, six days after the accident, he went to the St. Francis Hospital Eye Dispensary, where Dr. J. Hiland Dewey saw him. Regarding the ocular condition previous to this time, no accurate history was obtainable. The patient states that his eye was closed, the lids very much swollen, that there was slight pain on moving the eye, and numbness confined to the right side of his face.

The hospital notes, for which I am under obligations to Dr. Dewey, show that on admission there was swelling and ecchymosis of the lids of the right eye, subconjunctival hemorrhage, with maximal dilatation of the pupil, which was displaced excentrically towards the nasal side.

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*Read before the Ophthalmic Section of the College of Physicians, Philadelphia, April 21, 1910.

Transillumination of the ocular media revealed fine spicules in the nasal periphery of the lens. The eyeground examination showed signs of "commotio retinæ" with pigmentation below the macula, which pigmentation, however, seemed representative of an old lesion.

Vision in O. D. equaled 15/80.

Examination of the left eye gave negative findings, the vision being 15/20.

The treatment consisted in instillations of atropine and the internal administration of ammon. salicylate and potassium iodide.

At the time of his last visit to the dispensary (August 30th) vision in O. D. was 15/100 in the lower field. There was neither exophthalmos nor enophthalmos.

According to the patient's statement, diplopia was not noticed until some weeks after his last visit to the hospital, but recession of the eyeball was noticed sooner. He also states that he expectorated blood for weeks after the accident. Prior to the accident vision in O. D. had always been good, and he does not remember ever having been struck in the eye before.

The sunken condition of the right eye persisting, complicated with double vision on looking upward, the patient was persuaded to consult the Eye Clinic of the Out-Patient Department of the Pennsylvania Hospital (service of Dr. William T. Shoemaker), to whom I am indebted for the privilege of reporting this case.

The patient at that time presented very much the same appearance noted this evening. There was a pronounced right-sided enophthalmos, the eye resembling an artificial eye. Roughly estimated, the eye appeared to be 5-6 mm. further within the orbit than the fellow eye and on a plane several mm. below that of the left eye. The enophthalmos was uninfluenced by the stooping posture. Along the right supraorbital margin there was a linear cicatrix about 3 cm. in length, partially covered by the eyebrow, some slight tenderness along the lower orbital margin, and an irregularly linear, shallow depression of the bone, extending from below the outer third of the inferior orbital margin, were noted, the soft structures covering this region, however, appearing more prominent than on the opposite side. (To-day's examination shows rather a flattening beneath the right inferior orbital margin, but no signs as yet indicative of facial hemiatrophy. The right zygomatic process was prominent and appeared considerably thickened.

The right palpebral fissure was narrowed, owing to a partial ptosis of the right lid, the fold above the upper lid being deeper than over the left upper lid. The movements of the lids were not restricted. No cutaneous or corneal anesthesia could be elicited. There was impairment of right upward rotation and slight impairment of right adduction. In all other directions, ocular motility was undisturbed.

The red glass test showed a vertical diplopia in the upper field, suggestive of a paresis of the right inferior oblique and the right superior rectus. A lateral heteronymous diplopia increasing to the left was also present. (About the same condition exists to-day, except that impairment of right adduction is less marked.)

Both corneæ were clear and the conjunctivæ normal. The pupil of the right eye was 6 mm. in diameter, the reactions to light accommodation and convergence sluggish. and the consensual reaction equally impaired. The diameter of the left pupil was 2.5 mm., and the reactions to light accommodation and convergence prompt and complete. Cocain instilled into the right conjunctival sac caused a still greater pupillary dilatation, excluding thus a paralysis of the sympathetic nerve.

Ophthalmoscopic examination of the right eye revealed clear media, with the exception of a few fine spicules in the lens periphery. No rupture of the sphincter fibers was manifest. The disk was oval in shape, rather pallid, with a physiologic excavation. The vessels were about normal in size. Just below the macula and between the macula and the disk, there was a somewhat triangular-shaped patch of old retinochorioiditis with moderate pigment proliferation, each side of this irregular triangle being about two disk diameters in length. The disk of the left eye was of good color and the examination otherwise negative. Vision in O. D. equaled 5/25; in O. S., 5/5. The vision in O. D. to-day is about 5/20 with a + .50 c. axis 90, although the disk seems slightly more atrophic in appearance than seven months previously.

Though the poor vision in the right eye made it impossible to accurately determine the accommodative power, there apparently was, and still is, a decided impairment in the range of accommodation of the right eye. The refraction in both eyes is a low compound hyperopic astigmatism.

An examination of the right visual field shows a moderate concentric contraction for form and colors. The presence of scotomata could not be demonstrated.

The results of an X-ray examination, which Dr. Wm. S. Newcomet kindly undertook for me this afternoon (to whom I am also indebted for the interpretation of the skiagraphic findings), show that fractures had occurred involving the right zygomatic process, the external orbital margin, the inferior orbital margin, and probably the floor of the orbit, also the nasal orbital wall, including the adjacent ethmoidal sinuses and possibly the frontal sinuses. Figure A—an antero-posterior view of the skull—shows very well the difference between the right and left nasal orbital walls, the right orbital wall being much less sharply defined. The right ethmoidal sinuses, too, are irregularly outlined, and appear denser than those on the opposite side. The lesions at the external and inferior orbital margins are less easily discernible in the positive than in the negative. The lesions demonstrable in a lateral view of the skull, including those involving the zygomatic process and orbital margin, are also much better seen in the negative.

Excepting the anterior depressed fracture of the superior maxilla discovered by palpation, no positive evidence of a depression was revealed by X-ray examination, although it seems possible, in view of the extent of the traumatism, that some enlargement of the orbital cavity might have occurred.

Various theories have been advanced to explain the pathogenesis of traumatic enophthalmos, a complete summary of which, including a review of seventy-one cases collected from the literature, is contained in Birch-Hirschfeld's chapter on Diseases of the Orbit (*Graefe-Saemisch*, 1907). While some writers have attributed the affection to traumatic lesion of the sympathetic nerve (Talko, Beer, Schapringer, de Schweinitz, Franke and others), or to an injury of the fifth nerve (Denig), the mechanical theories have held the attention of most observers, and in the majority of the cases reported these unquestionably afford the most reasonable explanation. According to Parsons, "for the most part these imply a passive falling back of the eye, owing to a relative or actual increase in the size of the orbit, or an active retraction due to adhesions or muscular activity."

In many cases, the recession of the globe, be it active or passive, is probably preceded and facilitated by laceration, rupture or relaxation of the fascial attachments of the eye—the orbital check ligaments and the supporting sheath of Tenon's capsule. The attention of the section was called to the importance of Tenon's capsule and of the check ligaments in the etiology of traumatic enophthalmos, in a paper read by Shoemaker,[1] March 20th, 1901. Though Fick and Collins, in previous publications, had briefly referred to the fascial connections of the eye as possible elements in the causation of enophthalmos, Shoemaker was the first to enlarge upon this conception.

Birch-Hirschfeld also expresses the opinion that enophthalmos may result from a laceration of these ligamentous bands, and furthermore suggests the possibility of fracture of the bony structures to which they are attached. In the production of high-grade enophthalmos, however, he considers an absorption of retrobulbar tissue or enlargement of the orbit by fracture and depression, necessary adjuncts.

Nevertheless, a study of the cases cited in the literature shows that it is not possible to make one theory fit every case, and we must concur with Birch-Hirschfeld, who believes that enophthalmos may follow diverse etiological factors, the part which each plays often varying in different cases. Moreover, it seems quite within reason to suppose that in a single case several factors may contribute to bring about the condition of enophthalmos. Each case should, therefore, be considered a study in itself. Even then, at best, only probable hypotheses can be deduced in the living subject.

Depressed fractures of the orbital plates or fractures of the orbital margin have been frequently reported in connection with this affection, and there seems to be no doubt but that such complications, if not primarily responsible, in some cases at least, must be considered contributing etiological factors. Timely skiagraphic examination is, therefore, of value, and it is possible that further investigations along these lines in future cases will add to our knowledge regarding the causation of traumatic enophthalmos.

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[1] Annals of Ophthalmology, July, 1900.

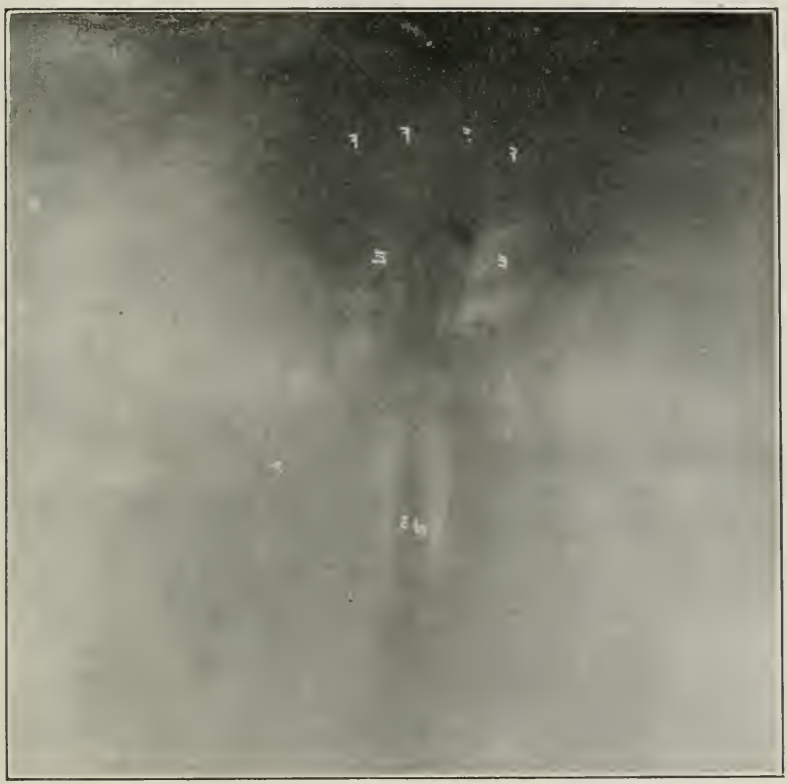

FIGURE I.

F, Frontal sinuses. E, Ethmoidal sinuses. NS, Nasal septum. Arrows indicate the position of fractures of the floor and margin of the orbit.

Unfortunately, in the case under consideration, the first X-ray picture taken November 11th, 1909, owing to a movement on the part of the patient, proved rather unsatisfactory, the skiagraphs on exhibition this evening not being obtainable until to-day, and because the patient lives in Trenton and he was unable to leave his work at an earlier date. Nevertheless, it is not very difficult to discover in the skiagraphs made even at this late day the location of the various bony lesions.

The disturbed appearance of the nasal orbital wall suggests the possibility of depression with hernia of the retrobulbar tissue in this region. In the absence, however, of positive signs indicative of enlargement of the orbital cavity, or of signs pointing to a lesion of the sympathetic or of the fifth nerve, I am inclined to attribute the enophthalmos in this case primarily to a rupture of the check ligaments or of the supporting sheath of Tenon's capsule, or to a relaxation of these ligaments due to fracture of their bony attachments; secondarily to the development of cicatricial tissue resulting from the laceration of the soft structures within the orbit. An immediate enophthalmos was probably prevented by an effusion or inflammation of the retrobulbar tissue.

The macular lesion was considered the result of the ocular contusion until Dr. Dewey informed me that a similar appearance was noted when he first saw the patient, which he at that time considered an old lesion in association with the symptoms and signs of commotio retinae. The patient, however, is quite positive he saw well with this eye before the accident.

The diplopia on upward rotation and extreme adduction in connection with dilated pupil and sluggish iris reaction is suggestive of a lesion of some of the peripheral branches of the oculomotor nerve. Such limitation of motility might, however, also be accounted for by the formation of fibrous adhesions within the orbital cavity, and the pupillary immobility ascribed to the effects of direct traumatism.

The intimate relation which the orbital structures bear to each other and to the adjacent bony wall brings up the thought, too, of the possible occurrence of complex lesions affecting these structures.

According to Shoemaker (in conversation), the disturbances of motility frequently observed as a complication of traumatic enophthalmos could be explained in some cases by relaxation of the globe, which follows rupture of the supporting ligaments. The eye not being properly fixed, the action of the ocular muscles thus becomes seriously impaired. Still there are not a few cases on record in which one would conclude from the degree of enophthalmos that extensive alterations of the anterior ocular attachments had occurred, and yet ocular motility is reported as having been normal in all directions.

While this case perhaps offers no new ideas concerning the etiology and symptomatology of traumatic enophthalmos, it at least contributes one more case to those cases of enophthalmos in which the most probable explanation of the pathogenesis is to be sought for in the mechanical factors arising from a severe orbital traumatism.

*1421 Locust Street.*

# A CASE OF BITEMPORAL HEMIANOPSIA WITH AN UNUSUAL CLINICAL HISTORY.*

William Zentmayer, M. D.

Philadelphia.

The following case of bitemporal hemianopsia has been thought worthy of record because of the unusually long period of time over which it extended, and because of the almost unique changes which occurred in the field of vision. The fact that one observer followed the case throughout its long course adds to the interest of the record which, however, loses much of its value for want of a postmortem examination.

C. D., female, age 27 years, married, came to the service of Dr. Norris at Wills' Hospital, September 10, 1890, complaining of a gradually increasing mist before her eyes for the past six months. It was accompanied by headache extending from the forehead to the occiput. She had had double vision when looking to the side, but to which side she was not certain. For the past week she had had swelling of the feet, abdomen and hands, with frequent micturition and pain in the loins. She had been married ten years and had had two children, one of which was living, and one dead. Menstruation ceased eight years ago after the birth of the last child, and has not returned. No miscarriages.

Vision O. D. = 5/50; O. S. = 5/50, in the nasal fields. Accommodation: O. D., T. 0.75 5 to 7 inches; O. S. 8 to 9 inches. The visual fields showed a contracted form with a bitemporal hemianopic color defect; macular vision being preserved in the right eye but lost in the left. The pupils were 3 mm. in diameter, and the hemianopic pupillary inaction sign was present in both eyes, but more marked in the right eye.

*Ophthalmoscopic Examination*—O. D. edges of the papilla hazy, vessels normal in size, but extremely tortuous. In O. S. the conditions were the same, only more pronounced.

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*The case was observed throughout its course by the writer, but the early notes were made by Dr. W. F. Norris and Dr. C. A. Oliver.

The patient was sent to Dr. B. C. Hirst, who reported that the ovary on the left side was enlarged, fixed and displaced, and suggested the possibility of an operation being later required.

A diagnosis of a neoplasm in the anterior part of the chiasm with pressure upon the left nerve was made. Potassium iodid in large doses was prescribed.

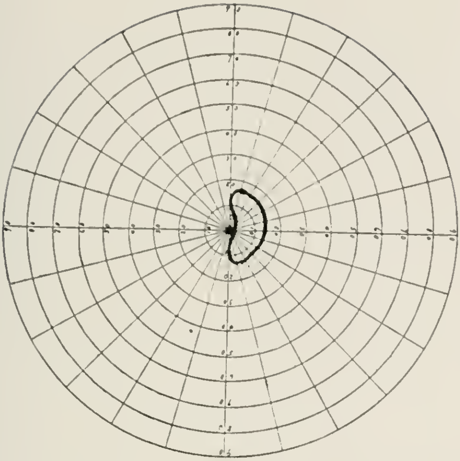
On September 15, 1890, there was noted a relative scotoma in the remaining half field extending to fixation in both eyes. V. = 5/xx.

Two weeks later the scotoma had disappeared, and in the left eye red was recognized as yellow in the lower outer quadrant of the area previously blind for this color. On October 17th this area had become included in the red field and adjacent to this there was a small area over which red was seen as yellow. This again appears to have been transient, as by November 5th the field was again hemianopic. By February of the following year the form field began to show very marked irregular bitemporal contraction, but this also was temporary, and by the middle of April the lost part of the form field had been in part regained. Two months later the superior temporal limits were greatly restricted.

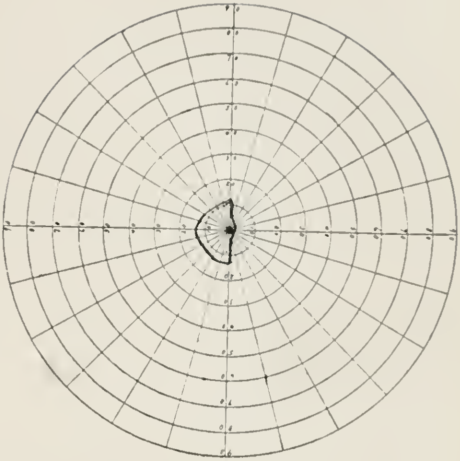
There is here a gap of four years in the record, and when the field taking was resumed in October, 1895, the field for both form and color was hemianopic and greatly contracted. Two and one-half years later (March, 1898) the contraction of the remaining half fields had increased. There was but little change in the fields from this date until March, 1903, at which time the remaining fields had contracted, measuring less than 20° for form and less than 10° for red; fixation was preserved. The patient was not again seen until March 23, 1909, when the fields were found to have lost their hemianopic form; in the right eye extending in the horizontal meridian from 42° on the nasal side to 18° on the temporal; and in the left eye from 30° on the nasal side to 18° on the temporal side.

Central vision improved from 5/L to 5/xv in the first six weeks of treatment, and thereafter it remained practically unchanged until her visit in March, 1909, when it was found to have improved (with the improvement in the field) to 20/xxx in the right eye and 20/xx pt. in the left eye.

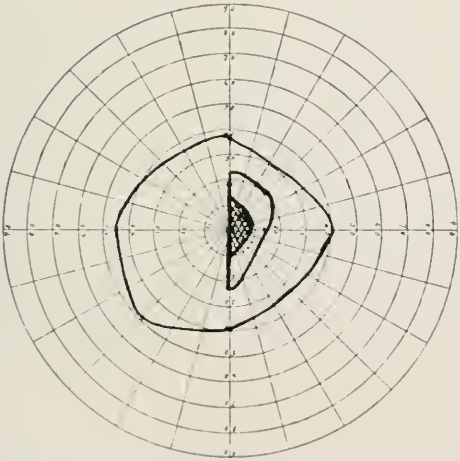
The entries in this case are so numerous that it would be



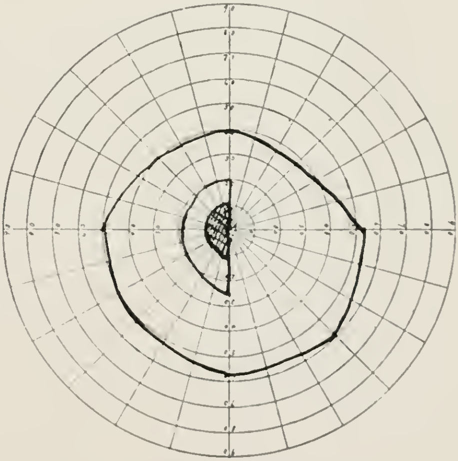
Field of L. E.; red.
September 10, 1890.



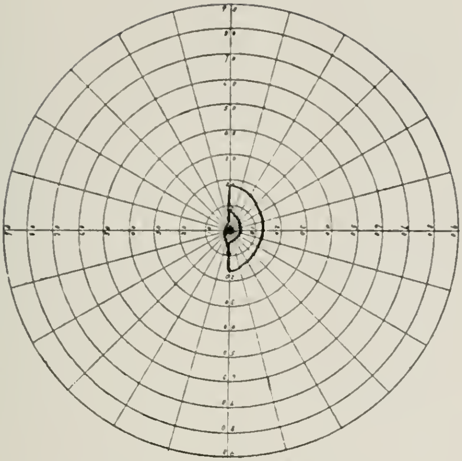
Field of R. E.; red.
September 10, 1890.



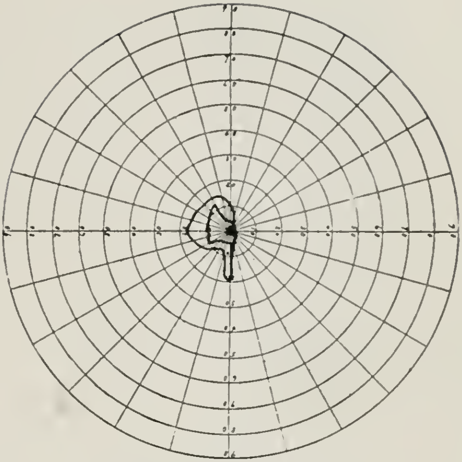
Field of L. E. Form, red and a relative scotoma. September 15, 1890.



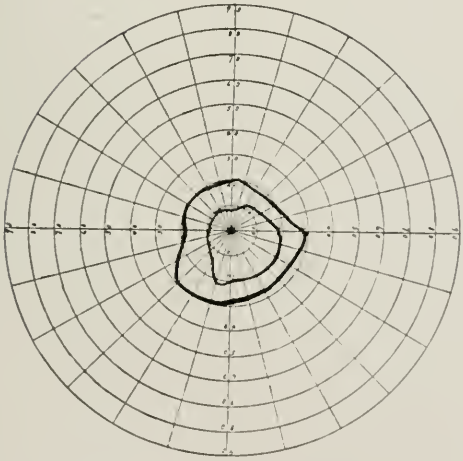
Field of R E. Form, red and a relative scotoma. September 15, 1890.



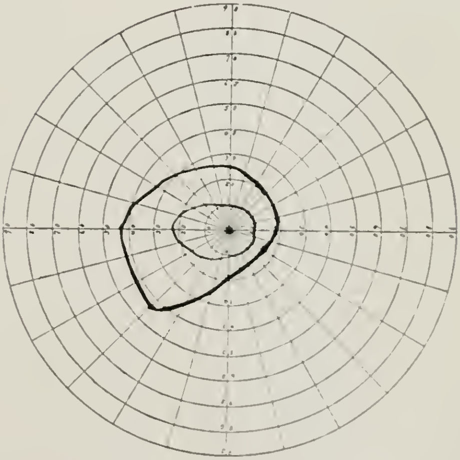
Field of L. E. Form and red.
March 28, 1903.



Field of R. E. Form and red.
March 28, 1903.



Field of L. E. Form and red.
March 22, 1909.



Field of R. E. Form and red
March 22, 1909.

tedious to recount them all. I have, therefore, included in the report only such as would seem to be of significance. In November, 1890, swelling of the feet was so marked that it was impossible to wear shoes in the morning. The periosteum of the right tibia was painful to pressure, but there was no edema. In January, 1891, she complained of dyspepsia, and this continued for several weeks. In March, 1891, there was marked hesitancy of speech, which continued to the end. In December, 1892, frequent nausea with occasional vomiting was present. In August, 1900, it is noted that she has become quite stout. Throughout the notes the station is recorded as being good and the patellar tendon reflexes normal, with occasional exaggeration. Headaches, occipital and left temporal, were fairly constant complaints.

*Ophthalmoscopic Findings*—In March and April of 1891 the papillæ became slightly prominent, the summit measured 1 D. more than the fundus level, and the vessels had increased in tortuosity. These conditions continued with possibly slight variations. In March, 1903, both papillæ were noted as being prominent over their nasal halves, edges veiled, entire surface gray, the temporal halves being decidedly less capillary than the nasal halves; veins quite tortuous.

On March 22, 1909, the patient returned, stating that on January 4, 1909, she had been taken with "congestion of the brain" and after being in bed one week had "battery" applied to the base of the skull, which was at once followed by loss of power in the left arm and with inability to swallow. She had no convulsions and was not unconscious. When first taken ill she lost the sight of the right eye, totally, and of the left partially. Two years previously she had had a similar attack with severe occipital headache and a tendency to pitch to the left. She was steadily gaining in weight, but not in strength. She cannot stand alone, as she pitches to the left. On looking straight ahead she sees double, the images being separated vertically and laterally. She has constant ocular pain and dull headache, failing memory and spells of crying without cause since the last illness, but all of the symptoms are improving.

The examination of the eyes at this date showed: Vision of O. D. 5/vii; O. S. 5/v. Paresis of the left inferior rectus and of the right external rectus. In O. D. the nasal half of the papilla was prominent, the outer half partially atrophic;

veins irregular and dark, and vessels reduced in size; O. S. papilla more prominent than at the previous visit (1903), veins full and tortuous, calibre more uniform than in the O. D.

On April 17, 1909, the diplopia had become more annoying; V. = O. D. 5/vii; O. S. 5/vi pt. On April 20, 1909, the patient was examined for the last time by Dr. J. H. Dewey, who had repeatedly seen her, and he reported that there was but little change in the appearance of the fundus.

She died November 19, 1909, of pneumonia. No postmortem examination was permitted.

The patient was seen March 23, 1909, by Dr. William G. Spiller, who, after examination, made the following observations: "The symptoms are suggestive of disease of the pituitary gland. The bitemporal hemianopsia can hardly be explained on any other basis. I think we must conclude that some growth of slow development is present at the chiasm, and has been the starting point for her symptoms. The improvement in vision, with diminution of the hemianopsia, is not surprising; I have known it to occur in tumor of this region, and the explanation is, that by constant pressure on the base of the skull (sella turcica) the bone is worn away, or by implication of the brain above the pressure on the optic tracts and chiasm is relieved. The same improvement in vision occurred in F. A. Packard's case of acromegaly, reported about 1890, in the *American Journal of the Med. Sciences.* The brain came into my hands and I found that the sella turcica was enormously enlarged.

"The patient has other symptoms which are somewhat difficult to explain by a tumor of the pituitary body, and yet I think they are caused in this way. It seems probable that the tumor has grown into the third ventricle, and possibly fills it, as it did in Packard's case. The pressure on the lateral walls of the third ventricle may cause many of the symptoms present in this case, and the interference with the flow of cerebrospinal fluid by a tumor in the ventricle may explain certain symptoms suggestive of cerebellar disease, as well as the variation in the intensity of the symptoms. Changes in intraventricular pressure may explain the transitory difficulty in swallowing, etc."

I know of no other reported instance, excepting that by Packard, in which, in a case of bitemporal hemianopsia, evidently due to grave organic cerebral disease, the blind area regained vision after a lapse of many years.

In Uhthoff's review of 328 cases of affections of the hypophyses and acromegaly, there was a postmortem examination in 51 of the 207 having acromegaly. In these cases visual disturbances were present in 180. In 50% there was bitemporal hemianopsia. Homonymous hemianopsia occurred with much less frequency. In 33 1-3% there was simple optic atrophy. Papilloedema and neuritis were much rarer than in hypophyseal tumors without acromegaly. Paralysis of the third nerve was the most frequent motor disturbance. Nystagmus was present in 6% ; exophthalmos in 8%. Edema of the lids occurred in consonance with like changes elsewhere in the body. The course of the disease with acromegaly was considerably more protracted than when this condition was absent.

*1819 Spruce Street.*

# MEDICAL ADVERTISING IN REMOTE TIMES—AN HISTORICAL SKETCH.

SAMUEL HORTON BROWN, M. D.

PHILADELPHIA.

(Continued from the July Number.)

Following this investigation further, most unusual kinds of information present themselves. Thus, among the several properties attributed to the horn of the unicorn, it is not surprising to find that it was believed to possess wonderful medical virtues. The chemists and apothecaries were not, however, slow to adopt it as a sign of their calling, in addition to the host of others they employed from time to time. It was extremely valuable, and we have the statement of an early Florentine physician, Andrea Racci, who relates that is was sold by apothecaries at £24 per ounce. In 1531, in Queen Mary's reign, a table of customs shows that the duty upon this article was 20s. The fine shavings of it were supposed to cure fits in children. Its greatest value was in detecting poisons. The pouring of liquids containing poisons into cups made of the unicorn's horn would be followed by fermentation of the said liquids, which would consequently rise up and run over the edge of the cup and be lost. This, it must be admitted, was a very valuable property.

Sampson also gives us a bill, which had a great circulation in the Eighteenth Century, which, headed by a wood cut of a unicorn's horn, gave notice of the marvelous curing abilities of a certain High-German:

"The High-German, Master of the Waxwork," "Hath an Unicorn's Horn that was found in the Deserts of Arabia, the Powder whereof does several wonderful Cures, whereof I was advised by several Doctors to Publish the same in Print; the cures that it has done are as follows: I have in my Travels by the Virtues of this Powder, saved the Lives of several Gentlewomen in Childbed, which could not be delivered before they took the Powder.

"About October the Fifth, 1702, I was in the Town of Hampton, in the County of Gloucester, at Mr. Gardner's, at the sign of the

Whiteheart, where I heard that one Mrs. Webb was in Child-Bed and could not be Delivered, so that Doctor Farr of the said Town, the Midwife and all women left her off for Dead, upon which I sent my landlady with a little of this Powder, the Quantity whereof would lie upon a Sixpence, which the Gentlewoman took, and was delivered in less than a Quarter of an Hour, Doctor Farr had given it under his Hand, and some other Gentlemen of the Town can testify that this Powder was the saving of her Life (under God).

"Likewise this Powder is a certain Cure for the Kings Evil, when it breaks and runs: The powder must be put on a Linnen Cloath and applied to the Place, and take as much as will lie on a Sixpence for two Mornings in warm Ale.

"The College of Physitians in London, hearing of the Powder, they came to my Lodging, on purpose to see this Horn and desired me to let them have some Experience to try if it would Expel Poyson, upon which they sent for two dogs and Poysoned them both, and asked me if I could save one of them, whereupon I took a little Powder of this Horn in a Spoonful of Milk, and gave it to one of them, that which I gave it to was saved, and the other died in their presence, after which the Doctors offered me a great Sum of Money for this Horn which I was willing to part with.

"If there are any Gentlewomen to buy any of this Powder, I sell it at Reasonable Rates, and it may be kept Ten Years and not lose its virtue."

It may be remarked in passing that in the reign of Queen Anne, a tax was placed upon advertisements to aid in raising revenue for war purposes. This caused a diminution in the number of such notices, but those of the tavern-keepers and nostrum vendors remained to a large extent.

In the same period, and during the first years of the Hanoverian succession, it was by no means uncommon for the most notorious quacks to obtain rank and social standing, provided they had no other claims to distinction and consideration. It would seem that a premium was placed upon quackery. Samson quotes the following concerning one of these individuals:

"Sir William Read originally a tailor or a cobbler, became progressively a mountebank and a quack doctor, and gained in his case, the equivocal honor of Knighthood from Queen Anne. He is said to have practised by 'the Light of Nature'; and though he could not read, he could ride in his own chariot, and treat his company with good punch out of a golden bowl. He had an uncommon share of impudence; a few scraps of Latin in his bills made the ignorant suppose him to be wonderfully learned. He did not seek his reputation in small places, but practised at that high seat of learning, Oxford; and in one of his addresses, he called upon the Vice Chancellor, University, and the City to vouch for his cures—as, indeed, he did upon the people of the three kingdoms. Blindness vanished before him, and he even deigned to practise in other distempers; but he defied all competition as an oculist. Queen Anne and George I, honoured Read with the care of their eyes, from which one would have thought the rulers, like the ruled, as dark intellectually as

Taylor's (his brother quack) coach horses were corporeally, of which it was said, five were blind in consequence of their master having exercised his skill upon them."

Sir William Read died in 1715. On the occasion of his being knighted by Queen Anne, the following lines were written by a Mr. Gwinnet:

"The Queen, like heaven, shines equally on all,
Her favors now without distinction fall.
Great Read and Slender Hannes, both knighted, show
That none their honors shall to merit owe,
That popish doctrine is exploded quite,
Or Ralph had been no duke, and Read no knight;
That none may virtue or their learning plead,
This has no grace and that can hardly read."

Digressing again from the main theme of this discourse, we find in the subject of bagnios some information which helps make this article more complete, to say the least. These were originally conducted as bathing establishments, and thus have some claim to our attention. Many of these were resorted to in a semi-therapeutic manner and were advertised at great length on account of their curative properties. In London, the term was for a long time restricted to bathing establishments, but the corrupt and immoral practices associated with them soon caused it to be used as expressive of a kind of house of assignation. The Duke's bagnio in Long Acre was built in 1676, and was perhaps the oldest in England. It was subsequently known as the Queen's bagnio. The Tatler, in 1709, contained this information:

"The Queen's Bagnio in Long Acre, is made very convenient for both Sexes to sweat and bath privately every Day in the Week, and cupp'd to the last perfection (he having the best and newest Instrument for that Purpose) It is sufficiently evident, that it exceeds all others, by being more and constantly frequented by the Nobility and Gentry. Pr. 5s for one single Person; but if two or more come together, 4s. each. There is no entertainment for women after 12 a clock at Night; but all Gentlemen that desire Beds, may have them for 2s per night.

HENRY AYME.

"If any Persons desire to be cupp'd at their own House, he will wait on them himself, he having had the Honour to give a general Satisfaction to the Nobility in the Performance of that Art, which he has acquired to a Nicety by a long and great Practise. Note, that his way of cupping is the very same as was us'd by the late Mr. Verdier deceas'd."

This reference to cupping and the intimation of Mr. Verdier's skill shows not only the custom of the times as regards this practice, but the necessity of getting into print as often and as much as possible. The instrument makers, then as now, appreciated this, and were not slow to use Mr. Verdier's name for all it was worth. Thus in the *London Journal*, May 5, 1722, we find:

> "At the Three Cupping Instruments, the Corner of Neal's Yard, in Great St. Andrew's Street, near the Seven Dials, liveth Peter King, who makes and sells the neatest and best Cupping Instrument that hath yet been made; the Invention of this sort (first) by his Father, instrument maker to Mr. Verdier, cupper to her late Majesty, Queen Anne; and since by me an Improvement hath been made on them, and now they are well known to be the best and neatest that ever was made—Gentlemen may be furnished with them either in Silver or Brass."

The *Daily Advertiser*, April 3, 1742, refers to a bagnio indicated by the sign of Two White Posts, as follows:

> "Brownlow Street New Bagnio, the back side of Long Acre where commodious Lodgings for Gentlemen and Ladies; and all useful Accommodations, by their most humble servant, Mary Banks, from the Crown Bagnio King Stret, Covent Garden."

The same paper, in November, 1741, prints: "Mrs. Ebeall, who kept the Charing Cross Coffee House of Spring Gardens, leading to the Park, now keeps the Bell Tavern, or New Crown Bagnio, Sweeting, and Cupping, at the lowest Prices; also good Attendance, and neat Wines, etc."

Leaving the subject of bagnios and following close upon Read, we encounter the celebrated Chevalier John Taylor, who belonged to a family of physicians, but was himself one of the best known quacks in medical history. He was born in Norwich, England, about 1703, and died in 1767. He was a master hand in the art of advertising and brought forth the reports of his marvelous work in a truly finished manner. He obtained great notoriety as an oculist, although he was of the traveling variety. While he resorted to hand-bills from time to time, his best effort was the book entitled: *"The History of the Travels and Adventures of the Chevalier John Taylor, Ophthalmiator, Pontifical, Imperial, and Royal,"* which was published in three volumes, handsomely bound in leather with gilt edges. There is no doubt that he traveled extensively, and that he took great care that he would manage to have some work appear in every language with which he came in contact. He employed every trick of the charlatan to bring himself and his methods before the public. In all he is said to have published forty-five books of one kind or another. His books in English were given over to an account of his successes in foreign countries. In his *"Life and History,"* written by his son, John Taylor, is contained an oration said to have been delivered on the streets of Oxford. His grandson accredited one Henry Jones with having compiled not only the history, but also the oration. However, the oration is characteristic of the man, as will be readily shown by a few quotations therefrom:

> "The Eye, that most amazing, that stupendous, that comprehending, that incomprehensible, that miraculous Organ, the Eye is the Proteus of the Passions, the Herald of the Mind, the Interpreter of the Heart, and the Window of the Soul. The Eye has Dominion over all Things. The World was made for the Eye and the Eye for the World."

Further along he says:

> "We owe the Ladies to the Eye, those Transcripts of the Angels, those Specimens of future Bliss, those Fountains of Joy, those Dainties of Desire, those Cordials of all Human Care, who people the Earth with their Energy, and the Sky with Inhabitants: these Patterns of Purity and Love, these master Pieces, these lucky Hits of Heaven, are the finest Regale for the Eye of Man, where it feasts on the Ruby of the Lips, the Vermillion of the Cheek, the Snow of the Forehead, and the Cherub in the Eye; and yet even these are but Signs, the Invitations held out of that extatic, that soul-absorbing—But Language is too weak."

Again he launches forth in his extravagant way:

> "The Eye is the Orator of Nature, and talks the Language of the Universe, of all beneath the Moon, of all above it; It talks the Language of Heaven, too; it renders useless all Sounds except the tender Moanings of Lovers, those turtle Cooings of Desire, those nameless Throbbings of Fruition; these, these are the genuine Dictates of the broken Raptures of the Soul, which she scorns to shape into Words; nor can she lose Time in so base a Labor."

After a score, more or less, of examples of such eloquence, one is scarcely surprised at the tenor of the grand climax, which runs as follows:

> "The three mortal Foes to Sight (my learned Sons of Wisdom) are the Glaucoma, the Cataract and the Gutta Serena; with these I wage eternal War. These Auxiliaries of ancient Night, that would restore her gloomy Reign, and bring back Chaos to the World once more."
>
> "My Art, O ye Sons of Oxford, my Art is the Ally of Heaven itself, and aids even the Almighty, obeying still, and still performing the omnipotent Behest, Let there be Light."

Another form of medical advertising worthy of notice is that which appeared in the *Daily Courant* of March 24, 1707, inserted by G. Willdey and T. Brandreth at the sign of the Archimedes and Globe, advertising a microscope which magnified objects more than two million times, and a concave metal that united the sunbeams so vigorously that in a minute's time it melted steel and vitrified the hardest substance. This extravagant claim led to a long-winded controversy on the part of this and other manufacturing optical firms with a most entertaining effect upon the reader of the paper.

In the early decades of the Eighteenth Century most of the opticians were wont to employ "Archimedes and Globe" as their sign. Scarlett, optician to His Majesty, near St. Anne's church, in Dean street, Soho, employed it, as did many others. The globe was derived from the arms of the Company of Spectacle Makers, while the name Archimedes was used on account of the traditional destruction of the besieged fleet under Marcellus at the siege of Syracuse, by large burning lenses devised by Archimedes. As a means of distinction, different opticians added the names of their respective specialties to that of Archimedes. Thus, John Marshall, on Ludgate Hill, advertised his shop as "Old Archimedes and Two Golden Spectacles," some time about 1697. In the latter part of the following century a passing observer would have found most of these shops employing the picture of Sir Isaac Newton, especially the telescope makers.

Readers of the press in the early part of the Eighteenth Century will be struck by the great tendency of obscure people to resort to advertising columns to obtain notoriety otherwise impossible. For instance, John Bartlett, a truss-maker, of Goodman's Fields, rises to prominence in the same print as that in which the Emperor of Germany is lauded. Apothecaries and instrument makers employed the same device, not alone for the financial returns, but for the publicity it afforded. Sir William Read, already mentioned, and a certain Doctor Clark, also an oculist, advertised at great length in a very controversial style. Yet in the medical and lay journals of to-day this trick is by some considered very modern.

The *Spectator* seems to have been a party to this dissemination of medical knowledge, as it was then considered. Thus in the original edition, in 1711, we find the following:

"An admirable confect which assuredly cures Stuttering and Stammering in children or grown persons, though never so bad, causing them to speak distinct and free without any trouble or difficulty: it remedies all manner of impediments in the speech or disorders of the voice of any kind, proceeding from what cause soever, rendering those persons capable of speaking easily and free, and with a clear voice who before were not able to utter a sentence without hesitation. Its stupendous effects in so quickly and infallibly curing Stammering and all disorders of the voice and difficulty in delivery of the speech are really wonderful. Price 2s 6d., a pot with directions. Sold only at Mr. Osborn's Toyshop at the Rose and Crown, under St. Dunstan's Church, Fleet Street."

Further the *Spectator* again indulges:

"Loss of Memory, or Forgetfulness, certainly cured by a grateful electuary peculiarly adapted for that end; it strikes at the primary source, which few apprehend, of forgetfulness, makes the head clear and easy, the spirits free, active, and undisturbed, corroborates, and revives all the noble faculties of the soul, such as thought, judgment, apprehension, reason and memory, which last in particular it so strengthens as to render that faculty exceeding quick and good beyond imagination; thereby enabling those whose memory was before almost totally lost, to remember the minutest circumstances of their affairs, etc., to a wonder. Price 2s. 6d. a pot. Sold only at Mr. Payne's at the Angel and Crown, in St. Paul's Churchyard, with directions."

Among apothecaries, the mortar and pestle has been a common sign since time immemorial. One of the most famous of early English apothecaries was one John Moore, "Author of the celebrated Worm Powder," who conducted a shop about 1710 in Poultney Lane. His advertisements in the papers were very numerous and given up mostly to a narration of his past cures.

Anodyne Necklace One of the most celebrated appliances of the early part of the Eighteenth Century was the Anodyne Necklace. It made its appearance early and survived much longer than most therapeutic agents of this character. Its origin is rather obscure, it having been said to have been devised by one Hugh Chamberlen, well-known maker of obstetrical instruments. In the *Weekly Journal*, January 4, 1718, appears the following advertisement:

"The Anodyne Necklace for Children's teeth, women in labour, and distempers of the head; price 5s. Recommended by Dr. Chamberlen. Sold up one pair of stairs at the sign of the Anodyne Necknace, without Temple Bar, at the Spanish Lady at the Royal Exchange, next Threadneedle Street; at the Indian Handkerchief, facing the New Stairs in Wrapping, etc."

In order to increase the popularity of the necklace, and as an inducement for sales, persons presenting themselves at certain establishments were given gratuitously a book having reference to a certain Mary Tofts, who pretended to give birth to rabbits. In order to stimulate demand for the book it was repeatedly stated that it was not to be given to any boys or girls, or any paultry persons. One of the pamphlets regarding this wonder, appearing in the *Daily Courant,* January 11th, 1726, reads:

> "The Rabbit Affair made clear in a full account of the whole matter, with the pictures engraved of the pretended rabbit-breeder herself, Mary Tofts, and of the rabbits, and of the persons who attended her during her pretended deliveries, showing who were and who were not deceived by her. Tis given gratis nowhere, but only up one pair of stairs at the sign of the Anodyne Necklace, recommended by Dr. Chamberlen."

In 1738, the *London Evening Post* contained a notice regarding the great value of the anodyne necklace in aiding the teething process in children. In the *Daily Advertiser,* October 15th, 1742, we find that the name Anodyne Necklace was used as an advertising sign against Descreux Court, without Temple Bar, for "the Famous Cephalic and Ophthalmic Tobacco which by Smoking a Pipe of it is good for the Head, Eyes, Stomach, Lungs, Rheumatism, Gout, Thickness of Hearing, Head-ach, Tooth-ach, or Vapours, etc., Price 4s a Pound."

John Ashton, in his *Eighteenth Century Waifs* (1887, p. 306), gives an excerpt from a newspaper of the early decades of this century, which reads: "A necklace that cures all sorts of fits in children occasioned by Teeth, or any other cause; also Fits in Men and Women. To be had at Mr. Larance's in Somerset Court, near Northumberland House in the Strand; price ten shillings for eight days, though cure may be performed immediately."

This very remarkable necklace was advertised as late as 1840 as of great value in the cutting of teeth in children, but in the hey-day of its success its virtues were extended to the relief and cure of gout, rheumatism and venereal affections.

Somewhat allied to the necklace was the "noted girdle," which was the probable precursor of the electric belt of recent times. The *St. James' Evening Post,* November 24, 1737, contained a notice in which Neelar of Hammersmith offered the girdle for the cure of every kind of skin disease at the modest price of 2s 6d each.

The use of the various parts of the anatomy as advertising mediums was indulged in by various merchants, and especially quacks. One living in Water Lane, Blackfriars, near Apothecaries' Hill, about 1720, used as his sign "The Hand and the Face." The very notorious S. Ketelby (*Harlein Collection, 5931*), who lived in Exeter street near the Strand, employed "The Hand and Ear," and advertised that:

> "He is capable now, not only of curing those incurable by others, but even those he could not cure himself six months ago! He resolves all persons deaf from external causes, whether curable or not, in two minutes, in the dark as well as at noonday, which no other pretender can do."

The *Weekly Journal,* December 2, 1721, contains the following in reference to one J. Manton, a surgeon located at the Balcony House, next to the Crown and Scepter Tavern in the Old Bailey, who had compounded a diet-drink for the scurvy, which he announced: To the World, in as open a Manner as can be, the Efficiency of this inestimable Medicine, and wishes "that any Practitioners, and others would pick out and send him some of the most miserable Objects eat up as 'twere with the scurvy, or overrun with Scabs, Sores, or Ulcers, and let off or turned out of Hospitals as incurable."

The *London Journal,* July, 1722, took great interest in the merits of a certain laxative known as the "Great Cathartic, or Great Restorer and Preserver of Health," which wonderful preparation was to be had only at the "Black Boy" on London Bridge.

This was not the only preparation in which the *London Weekly Journal* took an interest. A short time previous (May 21, 1720) we find in it an advertisement for "The fam'd Royal Eye Water," which was to be procured only from Mr. Huxley, a hatter, at the "Black Boy" against St. Dunstan's Church in Fleet street, London.

The sign of the black boy being quite the vogue in this period, we are not surprised to find it in connection with all sorts of trade and in various combinations. Thus we encounter one establishment under the management of one Thomas Winstone, known as "The Black Boy and Comb," which was located at first on Fleet street and later on Ludgate Hill, London, which establishment, somewhere in the period of which we speak, was the distributing point for a famous Hungary Water. This performed every miracle that a well-regulated, well-advertised water could be expected to perform.

Another combination in which the black boy appears was the "Black Boy and Truss," the relation of which to medicine is more pronounced than in the preceding. This was the sign employed by John Pindar in Bartholomew Close, West Smithfield, one of whose advertisements appeared as early as 1721 in the *London Weekly Journal* (June 24). This notice was accompanied by a wood cut showing a young negro boy with a truss in his hand, and read as follows:

> "Made and sold only by John Pindar at the 'Black Boy and Truss'—Fine Leather and Dimity Trusses for the Cure of Ruptures, easy to a new born Babe, and effectual in keeping up the Ruptures in the Old and Young, and by far exceeds all sorts of Steel Trusses. Those in the Country sending their Bigness round their Wast, and which Side the Rupture is, may be well served. He likewise maketh Strait Stocking and Navel Trusses that are entirely new Invention, and the Experience of them has proved a wonderful Happiness to many Persons, even beyond Expectation."
>
> "N. B.—Those that come may depend on a Cure, if curable, he being never known to fail, his Wife being as able and dextrous in curing them of her own Sex. N. B.—Those that are disposed to have Steel Trusses, may have all sorts. N. B.—The said John Pindar married the Daughter of the famous Mr. Wm. Jones who practised the Business, and kept the said House for above 30 Years; and for preventing Mistakes, the house goes up with 5 stone Steps."

One of the earliest advertisements in England, and perhaps elsewhere, regarding postgraduate study, is to be found in the *Craftsman*, February 2, 1728, reading: "to be opened on Wednesday, the 7th of February, by John Maubray, M. D., at his home in New Bond Street, a complete Course in Midwifery." He was the author of a book entitled "The Female Physician, containing all the diseases incident to that Sex in Virgins, Wives, and Widows"—which book he advertised in the *Evening Post*, February 15, 1724, and had on sale at the "Bible and Ball," a bookseller shop conducted by James Holland at the west end of St. Paul's.

In passing, reference may be made to "Dr. James's Powders for Fevers, and Greenough's Tinctures for scurvy of the gums—too well known to the Nobility and Gentry to need mention here, etc."—which were sold by one John Newberry at the sign of the "Kible and the Sun" at the corner of St. Paul's Churchyard on the north side of Ludgate street. Newberry published Goldsmith's "Vicar of Wakefield," and it is believed that it was from him that this noted author obtained the Dr. James's Powders said to have hastened the latter's death.

Somewhere about 1733, there existed a remedy for the gout known as "Oleum Arthriticum," which had the recommendation of a more or less worthy regular physician, and the unqualified endorsement of two or three booksellers who had the exclusive selling rights of the remedy. One of these was Alexander Cruden, the compiler of the "Concordance of the Old and New Testament," who conducted a shop under the Royal Exchange in Cornhill, which was designated as the "Bible and Anchor." The sales of his literary wares not being sufficient for his practical needs, he advertised himself, in 1736, as the only vendor in London of Dr. Roger's "Oleum Arthriticum," or Specifick Oils for the Gout, a medicine made known to the World through Dr. Stukeley's Letter, which he read at the Royal Society in February, 1732-33. (See *London Evening Post*, December 6, 1733, and *St. James's Evening Post,* October 21, 1736.)

This remarkable remedy was later sold by a Mrs. Marshall, a bookseller, whose shop over against the Hospital Gate, Newgate street, London, was known as "The Bible." Her advertisement read: "Oleum Arthriticum or Specifick Oil for the Gout," invented by Dr. Rogers of Sandford—successfully used for 15 years last past in curing the Fits of the Gout by taking off the Pain, shortening the Fit, without the least Danger of repelling, or other bad consequences—Letters testifying, etc., may be seen at Dr. Stukeley's, Price 7s. 6d a Bottle.—Dr Stukeley's Treatise on the Gout, and the Necessity of an External Application for the Cure thereof; with a Method of Regimen for Podagries. Price 6d. (*London Evening Post*, July 22, 1743.) Mrs. Marshall also advertised in the *Daily Advertiser*, July 6, 1742, that she had on sale—"Smith's Ague Tincture: or a Most Excellent Tincture for curing all sorts of Ague and Intermittent Fevers, invented and prepared by Mr Henry Smith, Apothecary in Oundle, Northamptonshire."

No quack received greater attention in the early part of the eighteenth century than did Joshua Ward, and he was the recipient of various kinds of newspaper consideration by reason of his alleged cures. His real claim to distinction, which, however, was submerged by his pretenses, was his discovery of a process of making oil of sulphur by the combustion of sulphur with saltpeter. His method being simple and inexpensive, he was enabled to market this "oil of sulphur" (sulphuric acid) at 2s the pound, thus entirely driving the "oil of vitriol" from the market. On account of a facial disfigurement he was known as "Spot Ward." He was also referred to as "The Pill Pilot." The notices that appeared from time to time are extremely interesting. Thus, in 1736, the *Gentleman's Magazine* published an obituary which cast an unfavorable reflection on Ward's wares:—

> "Vessey Hart, Esq., of Lincoln's Inn. About 15 Months ago he took the celebrated Pill, which had at first such violent effects as to throw him into convulsions and deprive him of his sight. On recovery he fell into consumption."

The same magazine, in July, 1734, contained the following lines relating to this celebrated gentleman:—

"UNIV. SPEC. ON WARD'S DROPS."

"Egregrious Ward, you boast with success sure,
That your one drop can all distempers cure:
When it in S——n cures ambition's pain
Or ends the Megrims of Sir James's brain,
Of wounded conscience when it heals the smart,
And on reflexion glads the statesman's heart;
When it to women palls old M-ar-'s gust,
And cools 'fore death the fever of his lust:
When F——ad it can give wit a taste,
Make Harriot pious or Lorima chaste;
Make scribbling B—dg— deviate into sense;
Or give to Pope more wit and excellence;
Then will I think your one drop will save
Ten Thousand dying patients from the grave."

The *Daily Advertiser*, June 10, 1736, seems disposed to laud Ward and his remedies, as appears from the following:

> "We hear that by the Queen's appointment Joshua Ward, Esq., and eight or ten persons, who in extraordinary Cases have received great benefit by taking his remedies, attended at the Court at Kensington on Monday night last and his patients were examined before Her Majesty by three eminent surgeons, several persons of quality being present when Her Majesty was graciously pleased to order money to be distributed amongst the patients and congratulated Mr. Ward on his great success."

The *Grub Street Journal*, which was never strongly inclined toward quacks, stated in June 24, 1736, that Ward and his associates had imposed upon Her Majesty, and satirized the entire affair in the following lines:

"SEVEN WONDERFUL CURES."

"One felt his sharp rheumatic pains no more:
A Second saw much better than before:
Three cured of stone, a dire disease much sadder,
Who still, 'tis thought have each a stone in bladder:
A Sixth brought gravel bottled up and corked,
Which Drop and Pill, he say'd by urine worked;
But Questions, asked the Patient, all unravelled;
Much more than whom the Doctor then was gravelled.
The Last a little Woman but great glutton,
Who at one meal eat two raw legs of mutton:
No wonder, since within her stomach lay
A Wolf, that gap'd for victuals night and day:
But when he smelt the Pill, he strait for shelter
Run slap into her belly helter skelter."

Another famous mountebank of the early part of the eighteenth century was one named Smith, who traveled through England with a coach with six bay horses, a calash and four, and a chaise and four, in a yellow livery trimmed with red, accompanied by four gentlemen on horseback, in blue, trimmed with silver. The footmen in yellow were his tumblers and trumpeters, and those in blue his merry-andrew, his apothecary and spokesman. Handbills were scattered far and wide heralding the approach of this wonder. He always assumed a suit of black velvet for the street, but for his more expensive chamber practice he wore a fine brocade gown. In his coach he carried a woman that danced on the ropes. In order to sell his wonderful medicines, he stopped in all the market places and, after erecting platforms, proceeded to give entertainments of one kind or another, during or after which he sold packets of medicine for the small sum of a sixpence.

A contemporary of the preceding by the name of John Moore, being less pretentious than he, resorted to the ordinary method of gaining publicity for his talents. A specimen of his advertising is to be found in the *Daily Post*, July 14, 1736, and reads as follows:

"These are to certify that I, Richard Sanford, Waterman, dwelling in Horsely-down-street, near the Dipping Pond, have a Son, who for a considerable Time was troubled with a Pain in his Stomach, a Sleepiness and Giddiness, whereupon I calling to Mind that some Years since my Wife's Mother, betwixt 60 and 70 years of Age, afflicted with a Palsy or Hemiplegia, or loss of the use of one Side of her Body, had been cured by

Mr. John Moore, Apothecary,

At the Pestle and Mortar in Laurence-Powtney's Lane, the first Great Gates on the Left-Hand from Cannon-Street.

"I applied to him for Relief of my Son, who after having taken a few of his Worm-Powders, they brought from him a Worm (or Insect) like a Hog-louse, with Legs and hairy, or a kind of Down all over it, and very probably more, but he going to a common Vault they were lost, upon which he is amended as to his former Illnesses, and I desire this may be Printed for the Good of others.

"Oct. 6, 1735. Witness: Richard Sandford.

"N. B.—The said John Moore's Worm Medicines and Green-Sickness Powders, are sold at Mrs. Reader's at the Nine Sugar-Loaves, a Chandler's Shop in Hungerford Market, sealed with his Coat of Arms, being a Cross, with the Words, John Moore's Worm-Powders, &c., inscribed round it: And if any are Sold at any place, except at his own House, without that Seal and Inscription, they are Counterfeits.

"He sells Byfield's Sal Volatile Oliosum, at 6d. per Ounce.

"To be had at the said J. Moore's."

We cannot but pause to commend the unselfishness and philanthropy of Sandford, and at the same time marvel at the fearful affliction of his son. It is regretted that this dreadful specimen evacuated by the young man was not preserved for future study.

While we scoff at the methods of the quack and charlatan, perhaps it would not be inappropriate to gaze upon those of the regular practitioner in former times. As we raise the veil of reverence to appease our curiosity, we find in the *Daily Journal*, July 22, 1734, the following:

"Whereas in the Papers of Saturday last, there was a Paragraph relating to a Dispute that happened at Child's Coffee-house, between a Doctor and a Surgeon; I think it my Duty to tell the Fact that occasioned this Dispute, truly as it is.

"On Wednesday the 10th of July I sent to Mr. Nourse; when he came I told him I had a Swelling and great Pain in my Leg; he saw it, said it was much inflamed, and that I must be blooded, take some Physick, and that he would send something that was proper to be applied; I was immediately let Blood; and he writ a Purge for me, to be taken the next Day, which I took, and am thereby, I thank God much better. Afterwards, in the same Conversation, he ask'd me how long I had been ill? My answer was, ten Days; he reply'd, have you been ill so long and had no advice? I then told him, I had, some Days before, been to the Jew Doctor's House; his Answer was, I suppose you mean Dr. Shamberg, and pray what has he ordered for you? I said, I could not tell; but being desirous that Dr. Nourse should see the Prescription, I sent to the Apothecary's for it by my Son, who brought it directly into the Room, where there was not anybody but Mr. Nourse and myself; Mr. Nourse looked upon the Bill, and told me I must take none of these Things now, nor the Spaw Water said I? (for that was Part of the Prescription), his answer was No, and laid the Bill down upon the Table, without saying anything more. This is the whole Truth, and I am willing to attest it by an affidavit.

"N. B.—When I sent for Mr. Nourse I was determined to apply no more of Dr. Shamberg, he being in a manner a Stranger to me, and I have been much worse every Day, from the Time I began to take his Medicines.

"Leadenhall Market, 1st July. "B. J. KNIGHT.

"The Propriety of Aesculapius prescription judge of by the effect. Q. Whether Steel steeped in Brandy and Spa Water, are proper for Shortness of Breath, or an Inflammation."

This notice appeared quite often and was accompanied by an affidavit; truly a grateful patient!

About the same period, a preparation known as Jesuit's Bark had considerable vogue, and the handbills circulated in its behalf served to show the antagonism that existed between the medical profession and the apothecaries of the time. One of these reads:

"Whereas it has been of late the Endeavor of several Members of the Physicians College to reform the Abuses of the Apothecaries, as well in the Prizes as in the Composition of their Medicines, This is to give Notice for the Public Good, that a superfine Sort of Jesuit's Bark ready powder'd and paper'd into Doses with or without Directions for the Use of it, is to be had at Dr. Charles Goodal's at the Coach and Horse, in Physician's Colledge in Warwick Lane at 4s per Ounce, or for a Quantity together at £3 per Pound; for the Reasonableness of which Prizes (considering the Loss and Trouble in powdering) we appeal to all Druggists and Apothecaries themselves in Town, and particularly to Mr. Thair, Druggist in Newgate Street, to whom we paid full 9s per Pound for a considerable quantity for the Use of our self and our Friends.

"And for the Excellency and Efficiency of this particular Bark enquire of Dr. Morton in Grey Friars.

"I am to be spoken with at Prayers at St. Sepulchre's every Day, but the Lord's Day at Seven in the Morning, and at Home from Eight in the Morning till Ten at Night.

"The Poor may have advice (that is, Nothing) for Nothing"

In the *Grub Street Journal,* September 2, 1736, appears a notice to the effect that a curious personage known as Mrs. Sarah Mapp, a female bone-setter, was besieged by a throng of lame persons at the White Hart Inn, in Whitechapel, for the relief of their infirmities. This individual was the daughter of a bone-setter named Wallis, who lived in Hindon, Wiltshire, and doubtless acquired her technic from her father. She produced some remarkable results, from all accounts, and was known as the "Doctress of Epsom" and the "Wonder of the Age." Her successes led her to extravagances that were difficult to check, and she died in poverty in 1737.

The *London Evening Post,* October 3, 1738, advertised that at the "Angel," in Maddox Street, near Hanover Square, or rather at a house next door to this tavern, was for sale: "A

Large Parcel of Right Irish Green and Yellow Usquebaugh . . . highly recommended by the most eminent Physicians for the Gout in the Stomach and Cholick, etc." This well illustrates the peculiar method by which houses of one kind or another were located, in the absence of street names and numbers, as well as the kind of names applied to Inns at this period; the marvelous virtues of something peculiar in the way of medicines, is by no means novel, but is common to every period in history.

To the members of the physical culture cult of our own day, the following, which appeared in the *London Daily Post* and *General Advertiser*, March 7, 1739-40, will be of interest, showing, as it does, that this method of combating physical conditions is by no means new:

"FULLER ON EXERCISE."

(A Book worth Reading.)

"Nothing ought to be thought ridiculous that can afford the least ease or procure health. A very worthy gentleman not long ago had such an odd sort of a cholick, that he found nothing would relieve him so much as lying with his head downward; which posture proved always so advantageous that he had a frame made to which he himself was fastened with Bolts, and then was turned head downward after which manner he hung until the pain went off. I hope none will say this was unbecoming a grave and wise man, to make use of such odd means to get rid of an unsupportable pain. If people would but abstract the benefit got from exercise from the means by which it is got, they would set a great value upon it; if some of the advantages accruing from exercise were to be procured by any other medicine, nothing in the world would be in more esteem than medicine.

"This is to answer some of the objections to the Chamber Horse (for exercise) invented by Henry Marsh, in Clements Inn Passage, Clare Market; who, it is well known, has had the honour to serve some persons of the greatest distinction in the kingdom; and he humbly begs the favour of Ladies and gentlemen to try both the Chamber Horses which is the only sure way of having the best. this machine may be of great service to children."

A curious circumstance, worthy of remark, insomuch as it bears an indirect relation to medicine, was the introduction of the Cimex lectularis, or common bedbug, in London. This parasite was scarcely known in this city prior to the great fire in 1666, and is believed to have been introduced with the new timber used in rebuilding the city. The pest, rapidly multiplying, became a subject for consideration by the medical as well as the lay public, and consequently we are not at all surprised to note the following in the *London Daily Post* and *General Advertiser* as early as March 15, 1740:

"Mary Southall"

"Successor to John Southall, the first and only person that ever found out the nature of Buggs, Author of the Treatise of those nauseous Insects. Published with the Approbation (and for which he had the honour to receive unanimous Thanks) of the Royal Society,

Gives Notice,

That since his decease she had followed the same business, and lives at the house of Mrs. Mary Roundhal, in Bearlane, Christ Church Parish, Southwark. Such quality and gentry as are troubled with buggs, and are desirous to be kept free from those vermin, know, on sending their commands to her lodgings aforesaid, when she will agree with them on easy terms, and at first will justly tell them which of their beds are infested, etc., and which are free, and what is the expense of clearing the infested ones, never putting anyone to more expense than necessary.

"Persons who cannot afford to pay her price, and is willing to destroy them themselves, may by sending notice to her place of abode aforesaid, be furnished with the Non Pareil Liquor, etc., etc."

Since this parasite is discussed in works on dermatology in modern times, I have taken the liberty to inclose this historical note. It is to be hoped that this Liquor was successful.

Wonderful as the Jesuit's bark was, it had a rival and successor in snuff, which was much used at this period and was accredited with the power of curing mental as well as physical disorders. In the *General Advertiser*, June 21, 1749, appears an advertisement for a snuff for the cure of lunacy, which reads as follows:

"Gentlemen,

"Once more I desire you to remember, I have published my Imperial Snuff, for all Disorders in the Head; and I think I might have gone further and said, for all disorders of the Body and Mind. It has set a great many to rights that was never expected, but there is a few, or none, that careth to have it published that they were a little out of their Senses, although it be really an Ailment that none can help; but there is present Relief, if not a Cure; but I hope, both, as by God's Assistance it hath been performed already on many. And I think it my Duty to let the World know it, that they may not bear so many miserable Ailments that it is capable of curing. I hear that it is reported abroad that I am dead, and that the World is imposed on; but, thank God, I am alive and put my Dependence on him, that he will give me leave to do some more service before I go home. But suppose I was dead, my Snuff is alive, and I hope it will live after I am dead, as it is capable of keeping the World in Sprightly Life and Health, which must be allowed to be the greatest Blessing in the World. But what is

Riches without that? And what would some have given for some of these Reliefs before it was advertised. But you are heartily welcome at this Price of Sixpence, at present, but I should be glad of more from the Rich. I do assure you it is sold at this Price in regard to the Poor only.

"I am yours, etc.

"Samuel Major.

"In Swedland Court, against the end of Half-Moon-Alley Bishopsgate Street."

The subject of advertising had reached such proportions in the latter half of the eightenth century that it afforded material for many an excellent essay, and in the *Idler*, in 1759, we find no less a personage than Dr. Johnson discussing it at length. Our dermatological interest is aroused by his reference to a vendor who sold a beautifying lotion that repelled pimples, washed away freckles, smooths the skin, and plumps the flesh, and lest he overtax the credulity of his patrons, confessed that it would not restore the bloom of fifteen to a lady of fifty. Johnson also takes notice of the celebrated Anodyne Necklace, so freely advertised at this period, for the ease and safety of poor "toothing" infants.

A prominent writer upon this subject shows us by his data the great reciprocal influence the fashions bore to the advertisements and the latter to the various proprietary articles. Thus, in 1760, we find it to be the fashion for the ladies to wear short-sleeved dresses, which naturally called forth preparations for whitening and beautifying the arms of those not especially endowed by nature, and as a result the newspapers were deluged with such notices as the following, which appeared in the *Chronicle*, April 19-21, 1760:

"GLOVES for LADIES"

"The true prepared French Chicken and Dog-skin Gloves, for clearing and whitening the hands and arms, perfumed and plain. As some ladies have had small confidence in these Gloves, till they have been prevailed upon to wear one Glove for eight or ten Nights when they have evidently seen to their agreeable satisfaction that hand and arm brought to such a superior degree of whiteness over the other as though they did not belong to the same Person.

"The above Gloves are prepared and sold only by Warren & Co., perfumers, at the Golden Fleece, in Marybone Street, Golden Square at 5s a pair who import, make and sell all sorts of perfumery Goods in utmost perfection. The Violet-Cream Pomatum, and celebrated quintessence of Laverder, by no other person.

"Ladies sending their servants are humbly desired to send Glove of the size.

"N. B.—Just landed, a fine parcel of the famous India Pearl...... The Queen's Royal Marble, at 20s., and Chinese Imperial Wash-ball, at 5s., that are so well known to the Nobility, &c. Ladies' Masks and Tippets."

A dentist in Coventry Street, London, in 1760, announced his trade by a sign bearing two heads, a sort of before-and-after theme. He was disposed to poetry in his advertising, and his wooing of the muse was more or less meritorious. Thus, in the *London Evening Post,* July, 1760, appears:

"Ye Beauties, Beaux, ye Pleaders at the Bar,
    Wives, Husbands, Lovers everyone besides,
Wh'd have their heads deficient rectify'd,
The Dentist famed who by just application
Excels each other operator in the Nation,
In Coventry's known street, near Leicester Fields,
At the Two heads full satisfaction yields.
Teeth artificial he fixes so secure,
That as our own they usefully endure;
Not merely outside show and ornament
But ev'ry property of Teeth intent;
To eat, as well as speak, and form support
The falling cheeks and stumps from further hurt.
Nor is he daunted when the whole is gone,
But by an art peculiar to him known,
He'll so supply you'll think you've got your own.
He scales, he cleans, he draws; in Pain gives Ease,
Nor in each operation doth fail to please.
Doth the foul scurvy fierce your Gums assault?
In this he also rectifies the Fault,
By a fam'd Tincture. And his Powder nam'd
A Dentrifice is also justly fam'd.
Us'd as directed 'tis excellent to serve
Both teeth and gums, cleanse, strengthen, and preserve;
Foul mouth and stinking breath can ne'er be loved
But by his aid those evils are removed."

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Returning to our old acquaintances, the quack medicines, we find in the *British Chronicle* for 1763, a notice which, apparently intended for the good of the unsuspecting public, in reality is an advertisement calling attention to the remedy therein mentioned and its proprietors:

"The late Joshua Ward of Whitehall, Esq., having left considerable quantities of his principal Medicines ready prepared, such and such only as may be applied for by name will be delivered at his late dwelling-house in Whitehall.

"As not the least pretense is made by us, of having any judgment in the application of Medicine, we presume to say no more than that the specified orders shall be delivered with the utmost care and fidelity.

"Ralph Ward, Thomas Ward, Executors."

"As the following was published by the late Mr. Ward it is necessary to adjoin the same.—'Having seen in the public papers that a woman servant discharged from my service advertises herself as (late) my housekeeper and assistant in preparing my medicines. It is a justice I owe to the public and myself, to declare, that this woman was hired and lived with me as, and at the wages of a common working servant, keeping no other. And as to what knowledge she may have in preparing my medicines, every living servant in my family, with the same propriety, may pretend to it, being all assistants to me by their manual labor.'

"Signed—Joshua Ward."

The indulgence of the reader is further craved for the following most beautifully worded notice of about the same period:

"Warham's Apoplectic Balsam, so well known as an excellent remedy against Fits, Convulsions, &c., cures deafness, bad Humours in the Eyes, inward Bruises, dissolves hard Lumps in the Breasts, and has often cured Cancers, as can be proved by Facts; is a sovereign salve for green Wounds, burns, &c., is prepared and sold only by W. Strode, at the Golden Ball, Tottenham Court Road, London.

"Who also prepares and sells Warham's Cephalick Snuff, of a most grateful smell, and an effectual remedy for giddiness, nervous pain in the Head, &c.

"Also Warham's excellent Mouth water, which certainly cures toothache, strengthens and preserves the Teeth, takes off all smells proceeding from bad Teeth, &c."

Another advertisement that appears in the *British Chronicle*, April 5-7, 1764, is of great interest by reason of its dermatological significance and would receive consideration even at this late period:

"A CARD TO THE LADIES."

"Mr. Gibson's Innocent Composition, is so greatly admired for its wonderful effects in removing by the Roots in half a minute, the most strong Hair in any part of the Head or Face, without the least hurt to the finest Skin of Ladies or Children; he sells this useful composition at 5s. an ounce, with full directions that any Person may use it themselves.

"Also his curious Preparation for coaxing Hair to grow on bald Parts when worn off by illness, it being allowed by many who have tried many approved remedies, to fully answer the desired purpose.

"Likewise his Beautifying Paste for the Face, Neck, and Hands, so well known to the Ladies for giving a true enamel to the Skin; in pots at 10s. 6d. In lesser pots at 5s. each. The above things to be had of him and nowhere else in England, next door to the Golden Star in Lower Cross Street, Hatton Garden, Holborn.—No less a quantity of the composition can be had than one ounce, nor of the preparation or paste than one pot.

"N. B.—Gibson in Gold Letters over the Door."

Advertisements of this character were frequent at this period. Soon, however, others having an indirect medical bearing appeared, which, while apparently philanthropic in character, paved the way for a series of obnoxious notices that crowd the newspaper columns at this present time. The following, for instance, from the *Gazetteer*, November 29, 1773:

"A Lady of strict Honour and Benevolence, who lives in a genteel sphere of Life, influenced by a variety of critical Circumstances, offers her services as an Advocate to persons under the most intricate Circumstances, especially to those of her own sex, whose Troubles she can with a secret Sympathy share, and who will point out certain Means of alleviating their Distress. The Advertiser has a Genteel House to accommodate such Persons, while their Affairs are settled. The greatest Delicacy, Discretion, and most Inviolable Secrecy may be depended on. Therefore to prevent being made the sport of Curiosity, the Advertiser is determined to answer such Letters only that appear explicit and satisfactory, with the Principal's Name and Place of Abode, Please to ddress a line (post paid) for Mrs. Gladden, at No. 5 Church Row, Aldgate Church, Whitechapel."

Following close in the wake of this individual, we find no less a personage than the notorious Mr. Patence, far-famed for his combination of practices, if for nothing else. One of his notices appearing in the *Gazetteer*, December, 1771, runs as follows:

"Mr. Patence, Dentist and Dancing Master, No 8 Bolt Court, Fleet Street; whose ingenuity in making artificial Teeth and fixing them without the least Pain, can be attested by several of the Nobility, and hopes to be honoured by the rest of the Great—may depend his Study shall be devoted to the good of every Individual. His whole Sets, with a Fine enamel on, is a Proof of his excelling all Operators. He charges ten Guineas for a whole, five for an upper or under Set, and half a Guinea for a single Tooth.—His Rose Powder for preserving the Teeth is worthy to grace and perfume the chamber of a Prince.—His Medicines for preventing all Infections and sore Throat have been experienced by several.—As for dancing, he leaves that to the multitude of Ladies and Gentlemen whom he has taught, and desires to be rewarded no more than his Merit deserves, nor no less. Public School nights, Monday, Wednesday, and Friday evenings; Tuesday Evenings set apart for Cotillions only.—N. B. His Rose Dentrifice may be had at Mr. Nesbit's Toy Shop Bishopsgate Street, and at his House, at 2s. 6d. the box."

Sampson (History of Advertising) tells us he was much given to secrecy, and that he offered advice free, the patient being supposed to buy the various nostrums he prepared, at his suggestion. This method of acquiring medical practice, or, better, medical business, is still in vogue in many cities, and is supposed to be of rather recent origin. Patence was profuse in the declaration of his wonderful surgical skill and his marvelous cures. Not only did he repair and make anew teeth, but he replaced broken noses and cured all manner of diseases, if his advertisements are to be believed. One thing he did do, and that was to change his address frequently, probably on account of the rapid increase (?) of business.

We have noted from time to time, in this little work, the tendency of quacks and charlatans to vary from the truth and to make all sorts of extravagant statements, which practice seems to have existed from, as Mark Twain would say, "time immaterial." Patence claimed to be a born surgeon, but Lattese, a Piedmontese, a contemporary, went further and made claims bordering on the supernatural. In the *Morning Post*, September, 1776, he advertised that he had discovered the wonderful secret of procreating sex at the joint option of the parents:

> "Should their desire be to have a girl, the success cannot be warranted with absolute certainty, though the chances will be highly in favor of such an event; but should they concur in their wishes to have a son they may rely that by strictly conforming to a few easy and natural directions they will positively have a boy."

While not exactly in the line of advertising as commonly understood, the following notice, clipped from the abstracts in the *Journal of the American Medical Association*, May 1, 1909, shows one of the uses to which public announcements were put in Mexico in the eighteenth century. The excerpt is made by Dr. M. C. Terry of the Marine Hospital Service from the *"Recopilacion Sumaria de los Autos Acordados de la Real Audencia de esta Nueva Espana*, 1677-1786," Belena, Mexico, 1787:

> "Circular of October 10, 1772."
>
> "Justices of the Peace to give Royal Assistance for the Cesarean Operation"
>
> "(It is decreed) That all justices of the peace shall supply the Royal Assistance whenever it is asked of them for the performance of the Cesarean operation, under penalty of 500 pesos; compelling when necessary (the attendance of) physicians; constraining also, the parents, husband or relatives of the dead woman in case of their refusal, opposition, or their failure to give due notice of the necessity of the operation."

In 1775, London was favored by the presence of a most extraordinary individual by the name of Graham who, by means of what he termed his celestial bed, created no small sensation. He was born in Cowgate, Edinburgh, in 1745, and was graduated from the University. He traveled extensively from that period, incidentally visiting America. His return to England, in 1775, was marked by the opening of an elaborate establishment in Pall Mall, which he later termed "The Temple of Hymen." At first he confined his remarkable talents to the cure of disorders of the eye and ear, as is shown by the following notice he caused to be published:

> "Dr. Graham began to practice in London, Feb., 1775, and the folowing is the state of his Practice in disorders of the Eye and Ear: from that time to November 1, being a period of nine months, cured or relieved, 281, refused as incurable on their first application 317, after a short Trial (by desire) found incurable 47; dismissed for Neglect, etc., 57; country, foreign, and other Patients, events unknown, 381."

After reading such a dignified report of his work, one is not a little surprised at the subsequent turn in his career. His manner was most fascinating and had not a little to do with extending the fame of his wondrous cures, and it was not long before he had quite an extensive practice in England and Scotland, not only among the middle-class families, but within the nobility as well. However, he was not content with orthodox success, but embarked on a most extravagant enterprise, which, in his own words, had for its object the propagation of a much more strong, beautiful, active, healthy, wise and virtuous race of human beings than the present puny, insignificant, foolish, peevish, vicious and nonsensical race of Christians, who quarrel, fight, bite, devour and cut one another's throat about they know not what. He founded his hopes on a perfect knowledge of human nature, with which his enormous experience had endowed him. In May, 1779, he opened his "Temple of Health" with considerable newspaper mention. A few words of description of this wonderful establishment are not amiss in this connection.

The very imposing front was ornamented with an enormous gilt sun, a statue of Hygeia, and other similarly appropriate emblems. The walls of the interior were lined with mirrors, the effect of which was extremely impressive; and the furniture was most elaborate. One of the apartments he utilized for the purpose of delivering lectures on the subject of health and procreation; for which he charged two guineas per lecture. The subject being a novel one and the price prohibitory, he managed to draw wealthy, even if dissipated, audiences. He supplemented his course by the exhibition of a female of beautiful figure called "the goddess of health," who usually followed his talk with a few remarks on the same subject. He also hired two men of extraordinary stature, and providing them without enormous cocked hats and showy liveries, had them distribute handbills from house to house through the city.

Hard times caused him to reduce gradually the price of admission to his lectures, so he dropped successively from two to one guinea, half a guinea, five shillings, half a crown, and when this field was exhausted contented himself with exhibiting the temple alone for one shilling.

The most remarkable part of his equipment was the "*celestial bed,*" as he termed it. It stood upon glass legs, perhaps by way of insulation, and was provided with the richest draperies. His claim was that married couples without children might have heirs by sleeping in this bed, for which privilege he charged the modest sum of £100 per night. This was not as prohibitory as would seem, since not a few persons of rank accepted the terms readily. Another one of his wonderful discoveries was the "Elixir of Life," which, upon taking, the subject had an option on life as long as he wished. A limited quantity of this marvel likewise brought £100. His next contribution was earth-bathing, which he practiced in public, to the great entertainment of the populace. But, like his other inventions, it was not to be had gratuitously. For one hour every day he admitted spectators, at first at a guinea, and then descended, as in the former instance, to one shilling, to view him and the goddess of health, immersed naked up to their chins in the earth. However, lest the sensitive might take offense at the lack of conventions, he always took great care that both he and the goddess should have their hair dressed in the best fashion of the times. It is worth while noting in passing that the goddess afterwards became the wife of Sir William Hamilton, and favorite of Lord Nelson.

Returning to Doctor Graham, we find that after these various ventures had exhausted themselves, he assumed the role of a traveling lecturer and doctor, using the various subjects in his repertoire as the occasion would suggest. He eventually became very poor and died at the early age of 52 years. In his prime, as already remarked, he indulged in newspaper advertising to an unlimited extent, and the character of his notices may be judged from the following, which appeared in the *Morning Post* in 1779:

"TEMPLE OF HEALTH, ADELPHIA."

"To their Excellencies the Foreign Ambassadors, to the Nobility, Gentry, and to Persons of Learning and Taste.

"By Particular Desire, the Exhibitions at the Temple of Health, will be continued as usual every Tuesday, Thursday, and Saturday Evenings till the Temple of Hymen be opened which will be announced in the Public Papers.

"The Celestial Brilliancy of the Medico-Electrical Apparatus in all the apartments of the Temple, will be exhibited

BY DR. GRAHAM HIMSELF

who will have the honour of explaining the true Nature and Effects of Electricity, Air, Music, and Magnetism when applied to the human body.

"In the Introductory Oration, the whole Art of enjoying Health and vigour of Body and of Mind, and of preserving and exalting personal beauty and loveliness; or in other words of living with Health, Honour, and Happiness in this world for at least an hundred years is pointed out and warmly inculcated. Previous to the display of the Electrical Fire, the Doctor will delicately touch upon the Celestial Beds which are soon to be opened in the Temple of Hymen, in Pall Mall for the propagation of Beings, rational and far stronger and more beautiful in mental as well as in bodily Endowments, than the present puny, feeble, and nonsensical race of Christians—probationary immortals, which crawl and fret, and cut one another's throats for nothing at all, on most parts of this terraqueous globe.

"This Apparatus which visibly displays, as it were, the various facilities of the material Soul of the universal and eternal Nature, is acknowledged by all who have seen it, to be by far the largest, most useful and most magnificent that now is or that ever was in the World. Admittance 5s.

"But in order that Persons of every rank may have a View of this most magnificent Apparatus, the Temple of Health may be viewed every Day this Week from two o'clock in the Afternoon till eight at Night. Admittance 1s.

"N. B.—A Pamphlet is now published, (by permission) with the particulars of several hundred Cures in confirmed Diseases lately performed at the Temple of Health, with the Names and residences, at their own particular Desire, to be had of the Porter at the Temple, price only 3d."

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Contemporary with the preceding was Van Butchell, who advertised to a great extent, but in a very novel manner. He startled the community when his wife died by having her embalmed and exposed to the view of his patrons. Not content with this, he even went so far as to call public attention to it by newspaper notices, such as the following, which appeared in the *St. James Chronicle,* October, 1776:

> "Van Butchell (not willing to be unpleasantly circumstanced and wishing to convince some good Minds they have been misinformed) acquaints the Curious no Stranger can see his embalmed Wife, unless (by a Friend or personally) introduced to himself, any Day between Nine and One, Sundays excepted."

The eccentricities of this individual are sufficient in themselves to entitle him to some attention, but especially is he deserving of it by reason of his own work in proctology. He was averse to the methods then in vogue by surgeons, and was by no means modest in his condemnation of them. His notices were particularly startling, to say the least. One very large sign he had painted over the front of his house and extended over the front of the adjoining house. His neighbor, however, rebuilt the front of his house and eliminated half of Van Butchell's advertisement, which then attracted more attention than it formerly did.

A newspaper of about the same time contained the following:

> "Tender-hearted-Man-User of the knife,—Wouldst thou cut thy Wife (Unless two were by?—Fearing she might die?) Is-not-blood-the-life? If the Empress of Russia—Emperor of Germany—the King of Prussia—an Immaculate,—or the Pope of Rome—were sorely smitten—with bad Fistulae and tormenting Piles—visited Martin to be made quite whole:—Without Conefinement—Fomentation—Risk—Infection—Poultice—Caustic—or Cutting—bringing two percent of Five Years Profit.
>
> "Less is not his fee. Nor would he suffer a third person to be in the room. Not wanting help,—he won't be hinder'd; by half-willed spies; slavish informers; nor sad alarmists. All his patients live; and jehovah praise."

This and many other notices written in a similar vein serve to place Van Butchell in a class by himself. The success of him and his contemporaries led to the levying of a tax by the British Government in 1783 on patent medicines, which tax was a source of considerable revenue for about a hundred years or more.

Consideration of Van Butchell is incomplete without some reference to his most prominent contemporary, Katerfelto, who is said to have practiced in London during the influenza visitation in 1782. He was of the itinerant variety and traveled from place to place with his wife and daughter in an old rumbling coach drawn by a pair of sorry hacks; and his two black servants wore green liveries with red collars. They were sent around town, blowing trumpets and delivering bills of their master's performances. In the daytime he exhibited a microscope and the wonders it disclosed, and in the evening electrical experiments, in which two black cats—"the doctor's devils"—played their part in yielding sparks. The entertainment concluded with tricks of legerdemain. He traveled considerably, both in England and continental Europe, and was given to puffing himself through every medium available.

Perhaps the most famous American quack (Packard, History of Some Famous Quacks, *Johns Hopkins Hospital Bulletin*, Vol. XV, No. 163, October, 1904) of early days was Elisha Perkins, the inventor of the celebrated Tractors bearing his name. He was born in Norwich, Conn., in 1741, and belonged to an intellectual and well-respected family in this section. He was a graduate of Yale and studied medicine under his father's guidance. He later practiced in Plainfield, Conn., and acquired considerable practice and reputation. The tractors, which were destined to bring notoriety and fortune to their inventor, were always accompanied by a pamphlet, and it is with pamphlets of this character that this little work has to do. In order to diffuse knowledge regarding this remarkable discovery he sent his son, Benjamin Douglas Perkins, abroad. This individual published a pamphlet containing the following information regarding the manner in which the remarkable therapeutic properties of certain metals were discovered:

> "The first remarkable incident that presented itself to the notice of Dr. Perkins, was the sudden contraction of a muscle, when he was performing a chirurgical operation. This he observed regularly took place whenever the point of the metallic instrument was put in contact with the muscle. Struck with the novelty of the appearance, he was induced to try the points of wood, and other substances; and no contraction taking place on these experiments, he thence inferred that the phenomena could be ascribed only to the influence of the metal.
>
> "About the same time he observed, that in one or two cases, a cessation of pain had ensued when a knife or lancet was applied to separate the gum from the tooth, preparatory to extracting it; and in the same year he discovered, that momentary ease was given in a few instances, by the accidental application of a metallic instrument to inflamed and painful tumours, previous to incision."

Further along in this pamphlet the reader is informed of the elaborate experiments of Doctor Perkins, with a view of determining the extent and nature of the peculiar properties. Thus we find:

> "The results corroborated and indeed exceeded his most sanguine expectations; for he discovered that, by drawing over the parts affected in particular directions certain instruments which he formed from metallic substances into certain shapes, he could remove rheumatism, gouty affections, pleurisies, inflammations in the eyes, erysipelas, and tetter; violent spasmodic convulsions, as epileptic fits; inflammatory tumours; the violent pains occasioned by a recent sprain; the painful effects of a burn or scald; pains in the head, teeth, ears, breast, side, back and limbs; and indeed most kinds of painful topical affections, which came under his care and observation. The instruments producing these effects are termed TRACTORS"

The writer from whom these extracts are taken (Packard) states that these tractors consisted of two pieces of metal, about three inches in length, each pointed at one end, and in appearance greatly resembling horseshoe nails. In their practical application they were drawn gently over the part affected for a period of ten to twenty minutes at a time. Great stress was laid upon the necessity of following out the printed instructions accompanying each set. It was further insisted upon that only Dr. Perkins' tractors were capable of accomplishing these results and that the purchaser should be careful to accept no substitutes. The retail price was five guineas a set. The tractors were destined to create quite a furore in medical as well as lay circles. Physicians, surgeons, clergymen, royalty, and other prominent individuals stumbled over each other in England and continental Europe to pay homage to the new discovery and its discoverer. This was not the case at his home, for he was shortly expelled from the medical society in which he had been a respected and prominent member. While books and papers in great numbers were written by the Perkins and other enthusiasts, they were not sufficiently strong to stem the tide of indignation that arose when the effects were shown to be capable of production by any kind of tractors, providing the imagination was sufficient. The elder Perkins also devised a specific remedy for diphtheria, typhoid fever and dysentery, which consisted of salt dissolved in vinegar and diluted with hot water. In an effort to demonstrate its value, he went to New York during the epidemic of yellow fever in 1799, where he contracted the disease shortly after his arrival, and died of the same in his fifty-ninth year.

Reference has already been made to the early appearance of a very obnoxious class of advertisements bearing upon medical topics, but few encountered up to this period seem so frank as the following, which appeared in the *Morning Post,* April 18, 1780:

> "Any Lady whose Situation may require a Temporary Retirement may be accommodated agreeably to her wishes in the house of a Gentleman of eminence in the Profession, where honour and secrecy may be depended on, and where every vestige of Pregnacy is obliterated; or any Lady who wishes to become Pregnant may have the causes of sterility removed in the safest manner. Letters (Post paid) addressed to A—B— No. 23, Fleet Street, will be attended to."

The membranes that surround a child at birth, to which the name caul has been applied, were for many years accredited with wonderful medicinal properties, together with the miraculous property of preserving the wearer from drowning. They were also used by public speakers and young lawyers as a means of inducing eloquence. Naturally, such a valuable commodity was widely advertised. In the *Morning Post,* August 21, 1779, there is the announcement that "Gentlemen of the Navy and others going long voyages to sea have their attention directed to the fact of a child's caul to be disposed of; inquiry to be made at the Bartlett Building's Coffee House in Holborn. N. B.—To avoid unnecessary trouble, the price is twenty guineas." Evidently it was not a preventive of bad debts! The variation in the prices charged for this wonder is shown by the following, which made its appearance in the *Times,* February 20, 1813, which paper at this period contained a number of similar advertisements: "A Child's caul to be sold in the highest perfection. Enquire at No. 2 Church street, Minores. To prevent trouble, price £12."

The following also serves to show one manner by which a common superstition may be perpetuated:

> "A CHILD'S CAUL to be disposed of, particularly recommended to persons going to the Continent on pleasure or business, officers in His Majesty's navy, merchants trading to the East and West and all other parts of the globe, being exposed to the dangers of the seas, having the caul in their possession their life will most assuredly always be preserved. Address by letter only, prepaid, to Mr. W., Temple Chambers, Falcon Court, Fleet Street."

It was not uncommon in the early part of the nineteenth century to observe, in France, in front of the establishments of midwives, signs showing the mother, usually a most sedate individual, in impossible manifestations of ecstacies over the new heir; and in the background pater familias was depicted with corresponding grace. Even at the present time (1909), in Philadelphia, in the Italian quarter, the signs of the midwives afford no little interest and entertainment. They confine themselves now largely to pictures of nude babies, who, for the most part, are shown lying upon the back, with extremities assuming every possible arrangement within the scope of the artist, regardless of the anatomic difficulties such a child would encounter in an effort to live up to the picture. The expressions upon these babies' faces illustrate all the emotions possible to a human being, except joy, but the signs none the less serve the purpose of advertising the midwife. It is not her fault if the real or the painted youngster is anomalous.

*Barbers' Signs and Advertisements.* Mention has been made from time to time in these pages of cupping and leeching and the manner in which those practicing these trades brought themselves to the notice of the public; many of these were barbers, and in addition to cupping and leeeching performed phlebotomy along with hair-cutting and shaving. They soon adopted the universal sign of the barber's pole, which promises to last throughout all time. More than one ancient manuscript shows the origin of this familiar sign to have been in the pole the patient was made to grasp in the operation in which a vein in the arm was opened for the purpose of withdrawing blood. The pole was naturally liable to staining, which would account for the red color, while the custom of wrapping white linen towels around the pole when not in use marks the beginning of the spiral stripes. These individuals were in the habit of placing the poles with the entwined towels without their shops, probably to hasten their drying, hence the custom of placing painted poles before the shops at the present day.

While the red and white striped poles were most common, there were many painted blue and white, black and white, red, white and blue, and some had a soap basin attached thereto. In the reign of Edward IV, a soap basin is known to have been in use. The early London barbers frequently used coins as trade tokens, on which there was usually a representation of a soap box. In Germany, as far back as 1612, reference is made to the use of the soap basin as a sign of the trade. In 1698 a visitor to London, one Monsieur Forbiere, observed that barbers hang out poles of a huge length, almost as long as a mizzen mast.

One very curious feature of the barbers' signs in early days, especially in London, was the notice they brought from the local government, it being deemed necessary to pass special laws to govern their use. Thus as early as 1599, the London court notices show that Marmaduke Jefferson "hath till next Courte to bring his fine for hangeing oute his basones on holidays." Another early reference is made in the books of the barber surgeons regarding the barbers' pole in an order of the court in 1566 to the effect that: "none do make any shew of Barborye on Sonndaies or other holy days," and further that the barbers shall not "hange upp any bason or pott or potts upon his poule Racke, shoppe windowes or otherwise on Sonndaies or holy days." The poule racke, herein mentioned probably refers to the pole rest.

In the course of time the more expert barber surgeons sighed for a change in classification, and we learn by reading a debate on the Surgeon's Incorporation Bill before the House of Peers in 1797, that there had been for some years a statute in force which required the barbers to have poles upon which were to be painted blue with white stripes, while the surgeons, in addition to a pole, were to display a gallipot (a small earthen jar or basin) and a red flag. Some exhibited teeth, blood-soaked rags, and even real blood in jars to the gaze of the ever morbidly curious public. Steele and others noted the great tendency of the barber to indulge in politics, music, poetry and physic, especially music, a tendency, it seems, which still exists. Innumerable instances could be quoted showing the frequency with which barbers adorned their windows and walls with inscriptions more or less poetic, and of a much higher order than the inscriptions of other trades.

The sanitary barber shop of our time seems to have had its analogue in the eighteenth century, if we may venture to place any confidence in the notice that appeared in the *Daily Advertiser,* July 1776, which reads as fololows:

> "Two Men beg leave to acquaint the Public in general that they keep the cleanest Barber's Shop in all London where the people can have their Hair cut for 2s., dressed for 3d., and be shaved for 1d.

One of these can bleed and draw teeth very well; he bleeds both in the English and German Manner, as well at home as abroad, and is exceeding careful. Bleeding 3d., drawing teeth 4d. There is a parlour made in the shop on purpose for bleeding and drawing teeth. The people may depend on being served immediately and well in every respect. No satisfaction, no pay. The above-mentioned Shop is at No. 7 King Street, Seven Dials."

It is deemed fitting that this collection should be terminated at the beginning of the nineteenth century, as the advertisements since then have been used as the basis of several crusades against quacks and their methods. However, as this effort has been concerned only with the historical aspect of the subject, it is hoped it has proved of interest to its readers.

*1901 Mt. Vernon Street.*

# ABSTRACTS FROM ENGLISH OPHTHALMIC LITERATURE.

## (UNITED STATES OF AMERICA.)

BY

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NEW YORK.

### Report of the Committee on Collective Investigation Concerning the Ocular Muscles.

HOWE, LUCIEN, Buffalo, N. Y., HANSELL, HOWARD F., and SCHNEIDEMANN, THEODORE B., Philadelphia (*Jour, A. M. A.*, July 30, 1910), summarize the results obtained from the study of the anatomy and physiology of the ocular muscles by them as follows:

*First.*—Corroborative evidence concerning the check ligaments, sufficient to warrant a definition of their extent.

*Second.*—Corroborative evidence of the existence and extent of the secondary insertions of the ocular muscles. All will probably now agree as to their clinical importance.

*Third.*—A few more exact dissections of the ciliary ganglion.

Passing next to physiology we have:

*Fourth.*—Corroborative evidence as to the power of accommodation with parallel visual axes.

*Fifth.*—New curves of the effects of cocain, showing the important fact that it has a cycloplegic action.

*Sixth.*—A curve for the action of homatropin, 1/50 of a grain.

*Seventh.*—Curves indicating that various strengths of eserin produce varying curves, showing its effect on the accommodation.

*Eighth.*—Corroborative evidence that orthophoria for the far point exists only in a small majority of cases.

*Ninth.*—There is a difference between minimum and maximum duction, the former being quite constant, the latter not ordinarily constant. M. L. F.

### Torsion of the Eyeball.

SHUTE, D. KERFOOT, Washington, D. C. (*New York Medical Journal,* July 16, 1910), says that in studying the movements of the eye *three* very distinct and separate portions of the cornea are to be noted, viz.: 1, The apex of the cornea; 2, the horizontal meridian of the cornea and its outer or temporal extremity, and 3, the vertical meridian of the cornea and its upper extremity as observed in the primary position of the eyes. The position of the apex of the cornea at the end of a version of the eye is ascertained in reference to rotations around two fixed lines in Listing's plane—a vertical and a horizontal axis. Rotations about the vertical and transverse axes in this plane can be compounded into rotations about any intermediate axis. The amount and character of the deviation of the apex of the cornea are noted in reference to the point of intersection of the fixed vertical and horizontal lines in Listing's plane; in other words, in reference to the location of the apex of the cornea in the primary position of the eye.

The amount or character of the virtual torsion of the eye are ascertained by noting the tilt, one way or the other, of the upper end of the vertical meridian of the cornea in reference to the vertical plane through the whole length of the line of fixation, and by regarding the eye along a fixed anteroposterior axis perpendicular to Listing's plane. Further, we must rigidly distinguish between *actual* rotations or versions around axes in Listing's plane, and *virtual* rotations or torsions around the line of fixation of the eye. M. L. F.

### Phlegmonous Inflammation of the Lids.

GOODENOW, NORMAN H., Seattle, Wash., and CHASE, E. FRANK, North Yakima, Wash. (*Ophthalmology*, April, 1910), report the following cases: Case I. B. E., female, eight years old, stated that a week previous the upper lid of the right eye became swollen, and remained so for two or three days, when it broke and discharged pus, after which the swelling abated. A few days later the left upper lid began to swell, and the swelling increased until the eye became completely closed. There was no history of infection or injury. She complained of soreness and stiffness of the neck, some malaise and general lassitude. The lid was brawny and stiff, the palpebral conjunctiva was rough, red and velvety, there was considerable mucopurulent discharge, the left preauricular and the cervical glands were distinctly palpable on the affected side. The temperature and pulse were normal. Later the abscess broke and discharged pus. Recovery soon followed. Case II. S. H., aged 16, had a severe pain in his head, which continued for several days, when the right eye became swollen. Two weeks previously he had been with a sick horse which had a sore on its leg, and had died the next day. The appearance of the lid and eye was much as in the preceding case. The patient was pale and much prostrated. The preauricular gland was enlarged and painful, the postmaxillary and cervical glands were enlarged. His neck was stiff and sore, and he had much headache and nausea; the temperature and pulse were normal. Smears taken from the conjunctival discharge were negative. The abscess soon broke and he was more comfortable. There was but little subsidence of the swelling, and the smear was again negative. He soon made an uneventful recovery. Case III. E. M., male, aged nine years. The history and course were almost identical with those of case I. A. F. A.

### The Advancement Operation in Squint.

HULEN, VARD H. (*Journal of the American Med. Assoc.*, July 9, 1910), describes the following operation:

"The necessary instruments are two No. 28 full curved sharp flat needles threaded with No. 6 iron-dyed black silk, the needles being placed in the middle of the sutures, a needle holder, fixation forceps, a strong pair of advancement or muscle forceps, tenotomy scissors, and a speculum; a strabismus hook is often useful.

The procedures are the same for either the internal or external rectus. After the complete anæsthesia, local or general, as the case may require, the speculum is introduced, the conjunctiva pinched up and incised vertically about 4 mm. from the cornea; the incision is extended above and below parallel with and corresponding to about one-third of the circumference of the cornea, and the conjunctiva separated toward the cornea and the site of the tendon. Next the tendon is loosened along its upper and lower margins and clamped close to the scleral insertion with the muscle forceps, including the distal margin of the retracted conjunctival wound. The globe is held in perfect control with the muscle forceps, and, the tendon insertion being completely exposed, the scleral stitch should be accurately placed. The conjunctiva is first entered from without inward, then with the needle firmly grasped in the holder the suture is inserted vertically into the sclera .to the limbus, taking as deep and wide a bite as is safe, and the double suture drawn half way through, again penetrating the conjunctival flap.

The tendon is next severed from its attachment, all the tissues as held in the jaws of the forceps are lifted and stretched into position for placing the second suture; the needle is made to penetrate from without inward through conjunctiva, Tenon's capsule and muscle at a point one-fourth the width of the muscle from one edge and as far back as we may wish to advance, the double suture is pulled half-way through and the needle is reintroduced at the corresponding point from the other border, penetrating from within outward, muscle, check ligament and conjunctiva.

The muscle forceps are then cut loose by severing the tissue as far from the jaws as one wishes to shorten, but not close enough to the suture to weaken its hold.

The needles are removed by cutting the sutures close to them. It will then be seen that there are really two sutures in the sclera and also two in the muscular tissues. One of the scleral sutures and one of the muscle sutures are crossed and used during the tying part of the operation for traction purposes only. The assistant has perfect control of the globe and the muscle by means of these traction sutures, and when he has brought them into the exact position required for correct fixation the operator ties loosely with a double twist the upper ends of the other sutures, the lower ends of those sutures are similarly tied, then he tightens the upper knot, now the lower one, and so on until the proper tension has been secured; each knot is then completed by the final twist, and the operation is practically finished. Supplementary conjunctival sutures will rarely be required." M. L. F.

### The Present Status of the Etiology of Squint.

ZENTMAYER, WM. (*Journal of the American Med. Assoc.*, July 9, 1910), reviews the different theories that have been propounded to account for the occurrence of strabismus and finds the theory of Donders upheld by the following facts: Convergent strabismus is associated with hyperopia in over 95% of the cases; the average degree of refractive error is very much higher in a series of cases of hyperopia with convergent strabismus than it is in a series of cases of hyperopia without squint; there is usually a difference in the refractive error in the two eyes sufficient to unequalize the visual acuity and thus favor a deviation of the more defective eye; in a considerable number of cases the correction of the refractive error relieves the squint; the fact pointed out by Donders that a convergent squint can be produced by placing before the eye a concave glass; that divergent strabismus is usually associated with myopia and that the same process of reasoning by which it is shown that hyperopia is the cause of convergent strabismus serves to explain the causation of divergent strabismus by myopia.

Worth admits that hyperopia has a close etiologic relation to convergent strabismus, but considers that the real cause is defect of the so-called fusion faculty.

Every clinician has observed how frequently the simple correction of the refraction error relieves the squint, and there is general agreement that Worth's ingenious method of restoring vision in the amblyopic eye is productive of excellent results; furthermore, in increasing the amplitude of fusion something is also accomplished in the way of diminishing convergence excess. So that aside from its purpose in developing the fusion faculty, the treatment must aid materially in restoring the normal relations between convergence and accommodation.

One of the cases reported by Worth is of particular interest. It was that of a child 5 months old with H. 5.5 D. in one eye, and 6 D. in the other. This child was cured by glasses and an occlusion bandage. Worth's explanation is that by giving glasses and so relieving the strain on the accommodation the visual axes were in the course of from 5 to 6 weeks brought back to parallelism, and that this allowed the natural development of the fusion sense to take place.

If it be, as Worth says, that the fusion faculty was allowed to develop naturally by reason of the visual axes having been brought back to parallelism, it follows that if the visual axes had not been brought back to parallelism the fusion sense would not have developed naturally; and this explains why the fusion faculty is found undeveloped in those cases of squint in which the refractive error has not been corrected early, and in consequence of which a convergent squint has occurred. In other words, the undeveloped fusion faculty is a result and not the cause of the squint. The theory of the absence of a normally developed fusion faculty seems best adapted to explain essential alternating squint; that is, a squint which does not evolve into the monocular, permanent type, but which continues through life as an alternating one, as here, as a rule, the visual acuity and the refraction are not at fault. It would seem that these facts, the absence of an error of refraction and the equal visual acuity of the two eyes, which sustain the theory when it is applied to this class of strabimus, rather weaken the theory when it is sought therewith to explain permanent monocular squint, as this form is so constantly associated with hyperopia and unequal vision. M. L. F.

### Etiology of Scleritis, Its Treatment and Results With Tuberculin.

TÖRÖK, ERVIN (*Archives of Ophthalmoloogy*, May, 1910), reviews the clinical picture of the disease and the literature, in so far as etiology is concerned. In his own summary he goes on to say that he has had under observation 3 male and 12 female patients, four of them between 10 and 20 years of age, six between 20 and 30, and five between 30 and 50. The anamnesis showed tuberculosis in the family of four patients, in two the illness of one member of the family was suspicious of tuberculosis. In nine cases the family history was negative. In five patients tuberculosis was present in some other part of the organism, but ten did not show any evidences of the disease. The scleritis was chronic in all his cases, having been present from three months to four years. In 13 cases he observed corneal complications, but in two the disease was confined to the sclera, or episcleral tissue. Six of the thirteen cases had iritis. He administered T. V. in 14 out of the 15 cases; 12 of them gave a positive reaction, 5 only general, 7 general and local. Two patients did not react even to 0.005 gr. T. V. Finally, he states that in his opinion, tuberculosis is the most important, most frequent, and probably the only etiological factor in scleritis, particularly the deep scleritis, which is complicated by the involvement of the cornea, iris and ciliary body. Rheumatism, he believes, may have something to do with episcleritis. H. G. G.

### Report of Two Unusual Forms of Congenital Cataracts.

Posey, Wm. Campbell, Philadelphia (*Ophthalmic Record*, March, 1910).

Case I. A girl 4 years old, an albino, whose sight was defective. She could see pieces of white paper 5 mm. in size on the floor with either eye without difficulty, but her distant vision could not be ascertained. Both eyes were microscopic. The anterior chambers were shallow, both irides arched forward, their bases indrawn and on a lower plane than the pupillary portion. Under high magnifying power the iris appeared rudimentary, the minor circle wanting, the major well developed. The pupils were 2 mm. in size and were influenced only slightly by illumination; both irides reacted to light stimuli. For visual purposes an iridectomy was attempted on the right eye in the upper quadrant. When the iris had been grasped with the forceps the membrane seemed to be adherent to the sublying capsule, and as either clear lens matter or vitreous began to present the attempt had to be abandoned. A few days later the patient was taken ill with measles, and a uveitis developed, which lasted six months. For 16 months afterward the eye which had been operated on remained quiescent, the cornea densely hazy in the pupillary area, the iris adherent anteriorly and the eye blind. The writer regards the ocular complications in this case as due to lack of development of the structures of the anterior segment. Case II. A baby, a few days old, in whom both lenses were opaque, of a yellowish-white color, with blotches of denser white areas. The eyes appeared perfectly developed in other respects, and it was thought that a needling later would give the child sight, but within a week it died suddenly in convulsions attributed to cerebral hemorrhage.

O. W.

### A Case of Congenital Cataract of an Unusual Type.

ZENTMAYER, WILLIAM, Philadelphia (*Ophthalmic Record,* April, 1910), describes the following case:

A man, 43 years old, had poor sight from childhood, at which time his trouble was diagnosed as cataract. The lens of each eye showed an irregular disk-like grayish white opacity with a central white dot above and to the inner side of the center of the pupil, surrounded by a grayish, mottled opacity which under mydriasis was found to extend nearly to the middle of the lens.

The left eye was selected for operation, the opaque disk was picked off and fell behind the iris. This produced little effect. Later, a free incision of the capsule revealed a small amount of cortex. Several days later a violent iridocyclitis developed, and continued for six weeks despite the free use of salicylate of soda and of cold compresses. About the fourth week an exudate appeared at the bottom of the anterior chamber and was removed by paracentesis. The vision in this eye was always poorer than that in the right, and was worse after the operation. In the opinion of the writer this case was one of congenital cataract, due to faulty development of the nucleus of the lens. O. W.

### Cataract-in-Capsule Extraction by a New Means and a New Method

SAVAGE, C. C., Nashville, Tenn. (*Journal of the Amer. Med. Assoc.,* July 3, 1910), gives the following detailed description of the method of extracting cataract with the use of the instrument devised by him, called a "cataract-in-capsule detacher," and described in a review in the *Annals of Ophthalmology* for Januuary, 1910, page 69:

The pupil is dilated, the eye cocainized and thorough aseptic preparation made. The upper lid is controlled by an elevator held by an assistant until the cataract has been extracted. A second assistant holds down the lower lid. The eye is fixed by grasping the tendon of the internus at its insertion. The section is made by a Graefe knife, making a conjunctival flap when possible. In making an iridectomy he prefers to have an assistant cut the iris while he holds the forceps himself, and he prefers a small iridectomy.

Still grasping the tendon of the internus, the operator lays down the iris forceps and takes up the detacher. He easily passes it through the corneal incision, directing the free point into the pupillary opening, and passing it beneath the nasal part of the iris, in contact with the anterior surface of the cataract. The angle of union of the two curves, and the vertical curve itself, are easily passed between the iris and the cataract. When thus passed, the horizontal curve must rest on the cataract about half-way between its center and its lower border, while the vertical curve must rest on the cataract half-way between its center and its temporal border; and both curves must be behind the iris, so that it may not be injured when the dislodging pressure shall be made. On two easily executed movements of the detacher depends success in freeing the cataract from its ligaments: First, by rotating the instrument on its long axis outward the vertical curve is made to press the outer edge of the cataract backward, while it makes the inner or nasal edge advance to the same extent. This pressure, when properly made, tears loose the lateral (both temporal and nasal) ligaments, almost from top to bottom. The detacher is now returned to its primary position, and the usual second movement is effected by advancing the upper end of the instrument in such a way as to make pressure with the horizontal curve. This pushes backward the lower part of the cataract, while it causes the upper margin to advance to the same extent. This tears loose the remaining ligaments above and below, which were not torn by the first rotation. The rotation of the cataract, first on its vertical axis, detaches all lateral ligaments, and second, on its horizontal axis, detaches the ligaments above and below. The two movements together sever the ligaments throughout the entire circle. After the second rotation the detacher is returned to the primary position, and then removed in the reverse order of its introduction.

The fixation forceps, having been used while making the corneal incision, while doing the iridectomy, and while using the detacher, must now be laid aside. In one hand the operator now takes the Daviel spoon, with the back of which to make pressure on the lower part of the cornea for the delivery of the detached cataract. In the other hand he takes the cystotome, with the shank of which to make counter pressure, if necessary, until the cataract begins to emerge, at which moment, while keeping up the pressure, he ceases to make counter pressure, and with the point of the cystotome transfixes the cataract from behind, and lifts it out of the eye. The moment after transfixion all pressure is removed, thus lessening the risk of escape of vitreous.

If any iris is in the wound, it is replaced; the edges of the corneal cut are coapted and the conjunctival flap, if any, is smoothed out. Now the operator takes the lid elevator in his own hand, and gently places the lid in its normal position.

The after-treatment is that usually followed. M. L. F.

### A Report of Three Cases of Glioma Retinae.

Stieren, Edward, Pittsburg, Pa. (*Ophthalmic Record*, March, 1910).

Case I. A boy, 2 years and 5 months old. Six months previously a yellowish-white reflex from the right pupil had been noticed. When examined the pupil was widely dilated with a striking amaurotic reflex. Tension, + 1. A mass occupied the vitreous chamber, pushing the lens forward. In the left eye the pupil was contracted, but dilated well with atropin. Tension normal. A mass with an elevation of 4 D., about the size of 3 papilla diameters occupied the inner lower part of the vitreous chamber. This was diagnosed as double glioma, and a double enucleation proposed, but the parents objected, and the child died about six months later. For several weeks before his death the eyes were greatly distended, discharged pus, and a spongy, bleeding mass appeared between the lids. For a week before death the entire body was paralyzed, and for some days there were constant convulsions, the boy being unconscious, and having lost control of his rectum and bladder.

Case II. A girl, 3 years and 4 months old. When first seen the right eye was strongly divergent, the globe enlarged and protruding with all its movements limited. Lids bluish-white, with veins dilated, pupil dilated and fixed, lens pink and translucent, revealing a grayish mass behind; apparently no light perception, a mass occupying the whole of the vitreous, tension + 1. Enucleation was performed two days later, when the apex of the orbit was found to be much indurated, and the stump bled profusely. The optic nerve was twice as thick as a normal nerve, and felt fatty. The tissues in the socket remained swollen and discharged a sanious mucoid fluid. Microscopic examination showed that the intraocular growth was a glioma of melanotic type. Three weeks later the child showed signs of basilar involvement, headache, vomiting, slow and intermittent pulse, and in a few days developed the hydrocephalic cry. Stupor increased, food and medicine were refused, convulsions set in, the head became retracted and the child died.

Case III. A girl, aged 7 years. Right eye smaller than left, with a tendency to turn upward; a condition which had persisted since her first year. Of vision there was only a small sector on the nasal side. Direct and consensual pupillary reflex present, lens and media clear. Fundus dotted with minute deposits of pigment and small atrophic areas. The disk appeared to be pushed upward, presenting an elevation of 8 D., sharply defined on the temporal side, but blurred above, below and nasally. A tentative diagnosis of tumor of the optic nerve was made, but the parents obtained another opinion, which allayed their fears, so they did not return with the child for five months, when the condition had entirely changed. Enucleation was performed ten days later, about 10 mm. of the nerve being included. A glass sphere was implanted in Tenon's capsule, but was ejected on the fifth day. In other respects the socket healed kindly, and there has been no recurrence up to the present time. O. W.

### The Surgical Treatment of Separation of the Retina.

Wood, Casey A., Chicago (*Journal of the Amer. Med. Assoc.*, July 23, 1910), presents the following conclusions:

1. Inasmuch as separation of the retina is not a distinct disease, but merely one sign—albeit a very important one—

of several different affections, it is not to be expected that it is to be cured or much relieved in every instance by some particular operation. The "one-disease-one-operation" idea can have no place here.

2. A large percentage of retinal repositions, including an unknown proportion of those that follow operative measures, belongs to the class of spontaneous cures. In such cases relief may have been assisted, hastened or rendered more or less permanent by the remedies exhibited, but the probability is that the patients would have recovered in any event.

3. So far as prognosis is concerned, the more hopeful cases are the recent, limited varieties—those produced by traumatism, postretinal hemorrhage and the like—as well as those resulting from removable causes. *Per contra,* old, extensive detachments, especially when associated with marked degeneration of the retina, vitreous and chorioid, are not likely to get well under any form of treatment. A long-separated, starved retina rarely regains its lost functions.

4. Recurrence of the detachment forms a disappointing feature in the treatment of the disease, and this fact should be considered by both patient and surgeon when the subject of operation is broached. On the other hand, it has been abundantly demonstrated that patients with separated retina have recovered after several relapses and after having submitted to many operations.

5. No patient should be regarded as permanently cured until at least a year after the replacement of the detached membrane. It is true that relapses are recorded after an interval of several years, but they are unusual.

6. When a patient presents himself it is best to try for, say, a month—indefinitely as long as improvement continues—nonoperative measures. A thorough study should be made of the case to determine, if possible, the cause of the detachment, that it may be treated *secundum artem* and, perhaps, removed. With this causal treatment give subconjunctival injections, instill atropin and keep the patient in bed. Pilocarpin sweats, with iodids or sodium salicylate, are also generally indicated.

7. Failing to improve vision or to replace the separated retina by milder means, resort should be had to operation, and the question of the best operation for the case in hand

at once arises. We know that the function of the retina gradually weakens the longer it is displaced; consequently the sooner one makes a choice of operation the better.

8. Deutschmann advises against his operation as long as the postretinal fluid is held within the upper quadrants of the globe. If we are debarred by this circumstance from the use of his methods, there can be no objection to the employment of scleral puncture, combined with the punctiform cautery of the denuded sclera over the site of the detachment. Why should we wait until the retina is further detached and degenerated?

9. In those cases in which the sac occupies, as it generally does, the lower aspect of the hyaloid chamber, Deutschmann's method of bisection should be the operation of election, whether or not there be evident rents in the retina or visible fibrillæ in the vitreous.

10. Two weeks after the intrabulbar operation a careful examination of the eye should be made—with the electric ophthalmoscope (so that the patient may keep the prone position), hand perimeter, ward charts, etc.—to decide if improvement has taken place in the local conditions as well as in central and peripheral vision.

11. Assuming the eye to have recovered from any operative measure, i. e., to be free from either intraocular or extraocular inflammation, the same or another operation may be done in three to six weeks' time.

12. In unpromising cases Deutschmann's intraocular injections of animal vitreous is in order, although Mueller's exsection of the sclera seems a rational though formidable procedure, which an improved technic and a wider experience may yet demonstrate to be of great value in the conduct of this extremely serious condition. M. L. F.

### Spontaneous Rupture of the Eyeball.

Ellett, E. C., Memphis, Tenn. (*Journal of the Amer. Med. Assoc.*, July 16, 1910), reports the spontaneous rupture of a glaucomatous eye in a man 68 years old. The eye was enucleated and the pathologic condition found to be as follows:

"Microscopically a section in the antero-posterior diameter shows a hernia of the ocular contents through the center of the cornea. The retina and chorioid are detached except at the nerve head, and these tissues make up the mass of the hernia. The space between the sclera and the detached chorioid and retina is occupied by blood. The head of the nerve shows deep cupping.

"Microscopically the corneal tissue shows inflammatory changes of marked degree. The tissue is œdematous and there is a great increase of cellular elements. There is no necrotic material such as one would find in an ordinary ulcer. The arteries of the limbus region show the same changes; the new cells here are mononuclear cells. The arteries of the limbus region have markedly thickened walls, and in one set of sections marked inflammatory changes are seen in the outer wall of a large vein (periphlebitis). The prolapsed tissue is made up of vitreous, iris, chorioid, and retina, and all of them are oedematous and full of blood. There is little to be made out of the study of the iris, chorioid, and retina, except the fact that the iris and chorioid are the seat of a great increase of cellular elements, and the vessels show marked thickening of the walls. The most striking changes found in the tissues are the changes in the cornea and the changes in the blood vessel walls. These changes probably explain the bursting of the eyeball and the hernia of its contents."

A summary of 22 similar cases taken from the literature is appended. M. L. F.

### Report of Recovery From Chronic Sympathetic Ophthalmitis With Normal Vision.

FRIEBIS, GEORGE, Philadelphia (*Ophthalmic Record*, April, 1910), reports the case of a man who had been struck in the left eye by a piece of steel on October 28, 1908. The wound healed, but inflammation set in one month later. On March 9, 1909, he became a patient at the Wills Hospital, where the injured eye was enucleated. When the writer first saw this patient he presented the following conditions: Decided sclerocorneal congestion; photophobia; complete posterior synechiæ, the lens somewhat opaque from the plastic exudates of the iridocyclitis. The iris, throughout more than half of its circumference, was distended in the form of a vertical crescent by fibrino-plastic exudates, and was atrophied, the central portion of the lens clear. The vision was 15/200, the fundus hazy, and there was a small atrophic patch in the superior quadrant of the retina near the edge of the disk. Treatment, after purging with calomel, consisted of mercurial inunctions in the right temporal region at night, hot moist compresses every two hours, ten minutes at a time, sweat baths three times a week, instillations of atropin and dionin three times daily, and occasional blistering of the right temporal region: potass. iod. in ascending doses until the stomach revolted at 60 drops, when it was discontinued for a few days; later, sodium salicylate was used with very satisfactory results. Five days after the beginning of this treatment the sclerocorneal congestion had slightly subsided and vision was 15/100. The improvement steadily continued until October 5, when the vision and the field were normal. The result has thus far been permanent. O. W.

### The Danger of Sympathetic Ophthalmia From the Use of the Cautery in Treating Iris Prolapse.

Gifford, H., Omaha, Neb. (*Jour. A. M. A.*, July 30, 1910), concludes that fresh, noninfected prolapses should be replaced if possible; that prolapses which cannot be cleanly excised should, if possible, be cauterized and the area scraped and protected at once by a conjunctival flap; that on account of the danger of sympathetic ophthalmia no prolapse should be treated by a hot metal cautery unless a protecting conjunctival flap can be made to adhere to the area cauterized, as it is probably safer to leave the prolapse alone; that in some cases of large corneal prolapse to which conjunctival flaps can be made to adhere with difficulty or not at all, the use of trichloracetic acid, and probably other chemicals, produces a firm, non-irritable scar. Whether this method is entirely devoid of danger remains to be seeen. M. L. F.

### The Use of a Mass of Fatty Tissue as a Stump in Ocular Prothesis.

Ibershoff, A. E., Cleveland, Ohio (*Ophthalmic Record,* March, 1910), describes the following method:

A circumcorneal conjunctival incision is made and the conjunctiva completely undermined. A catgut suture is passed through the tendon of each rectus before the latter is severed. These sutures are reflected out of the wound, and the eyeball removed in the usual manner. A mass of fat about the size of a walnut is excised from the patient's abdomen or gluteal region. The orbital hemorrhage is controlled by pressure, the excised fat is placed in the capsule, and four sutures tied over it, uniting the recti muscles in the form of a cross. Tenon's capsule is then sutured with fine catgut and close stitches, the conjunctiva is sutured with silk, and the usual dressing applied without pressure. The conjunctival sutures may be removed within a week, and a shell eye fitted three weeks later. The advantages claimed for this operation are a more prominent stump and increased mobility of the prothesis. O. W.

### A Case of Osseous Tumor of the Orbit.

HANSELL, HOWARD F., Philadelphia (*Ophthalmic Record*, March, 1910). The patient was seen by the writer in July, 1909, and stated that the left eye had, without known cause, commenced to become prominent two years before, and that the prominence had slowly increased. There was pain near the median wall, and the vision was at times dull. There was almost constant diplopia in all parts of the field, marked proptosis down and out, no rotation upward, and all movements restricted. The anterior edge of a tumor was perceptible above and to the nasal side of the eyeball. An incision was made through the lid and other tissues anterior to the tumor, which was round, about the size of a horse chestnut, and attached to the inner orbital wall by a round pedicle of bone. The pedicle was broken with a hammer and chisel, and the tumor removed, leaving a small perforation into the ethmoid cells. The lid and the underlying tissues were sutured and an iodoform gauze drain inserted. The patient recovered and returned home in a few days, but the eyeball was still immovable and dislocated. Three months later it had returned to its normal position in the orbit, and all motion, except that controlled by the superior oblique muscle, was restored The ptosis had disappeared and the vision was acute. The perforation through the ethmoid plate had apparently not healed, as the patient had a sensation of cold in the nasal side of the eye when inhaling deeply. O. W.

### A New Forceps for the Removal of the Anterior Lens Capsule.

TOOKE, FREDERICK, Montreal (*Ophthalmic Record*, May, 1910), describes this instrument as L-shaped, the handle gradually tapering towards the end, about 8 cm. long. At a point in the center of one handle is a buffer pin which fits into a small aperture in the arm of the handle directly opposite. A shoulder on this pin prevents undue pressure on the frail extension blades. The extension blades and the part forming the arm of the L are of finely tempered steel, welded to the blades at an angle of 130 degrees. These extension blades are used within the anterior chamber, are curved concavely below, permitting a uniform pressure over the whole of the lens surface. Two sets of minute interlocking teeth are set at the heel and toe of the blades, which allow a free hold of the underlying capsule. O. W.

### A Stigmometric Card Test for Illiterates.

FRIDENBERG, PERCY (*Archives of Ophthalmology*, May, 1910), has arranged a series of dots and squares for both short and long range, constructed on the principle of the minimum separabile, to correspond with the Snellen types.

H. G. G.

### The Present Status of Calmette's Conjunctival Reaction in the Diagnosis of Tuberculosis.

CALHOUN, F. PHINIZY, Atlanta, Ga. (*Ophthalmology*, April, 1910). In the summer of 1907 Calmette announced a "positive" method of diagnosis of tuberculosis, depending upon the instillation of a 1% aqueous solution of tuberculin in the conjunctival sac. The formula for the preparation of the solution, in brief, is as follows: One part of dried tuberculin, precipitated by alcohol, is dissolved in one hundred and ten parts of sterile water, or normal salt solution, and of this liquid one or two drops is placed into the conjunctival sac of the eye to be tested. He described the reaction as "a slight swelling and redness localized about the caruncle, the inner canthus, and the conjunctiva." Unfortunately, in using this test, there has been no standardizing of the tuberculin and no uniformity in what constitutes a reaction. The reaction generally appears in from two to four hours, or there may be a delayed reaction as late as twenty-four hours after the instillation. The reaction usually subsides in forty-eight to seventy-two hours. Undoubtedly the intensity of the reaction is, in general, inversely as the extent of the infection, and directly as the resisting power. In cases which are known to be tuberculous by clinical methods, 50% to 93% give a positive reaction. From the French reports of 14,800 cases as given by Smithies and Walker, 93% showed positive reaction. The same authors quote from the German reports of 1,554 cases that 86% reacted. In the group of doubtful and suspected cases from 15% to 55% react. Calmette reports that in a group of 14,000 suspected cases 61% reacted. The German reports, again, show a lower percentage, viz., 51%. This test has been applied to individuals apparently healthy. Here again we find a higher percentage among the French than among the Germans and Americans. Calmette states that 18% of his cases of this class show the reaction. This corresponds with the proportion of tuberculous lesions found at autopsy in France. Other diseases than tuberculosis are said to react to this test. In typhoid fever it may be obtained, particularly during convalescence. Reactions have been noted in lobar pneumonia and sepsis, leukæmia, scarlet fever, articular rheumatism, syphilis, leprosy, and actinomycosis. The interpretation of a reaction, whether positive or negative, is a matter of grave importance. When a reaction is prompt, it is generally conceded to be excellent proof that the patient is tuberculous. By physical examination, this test can usually be confirmed. The fact that there is no reaction in a suspected individual, by no means excludes him from being tuberculous. If there is no reaction to a second test, given several days after the first one, and with the same or a stronger solution, it is additional evidence that the patient is not tuberculous. Miliary tuberculosis, tuberculosis in a moribund condition, healed over or inactive processes, all can give negative reactions. The contraindications to this test are: (1) affections of the eye of every form and stage, even those completely healed; (2) young children; (3) a previous conjunctival reaction; (4) the intention of using tuberculin in subcutaneous injections soon after the conjunctival tests. Many complications have been reported, particularly mucopurulent phlyctenular and membranous conjunctivitis, miliary nodules, episcleritis and scleritis, simple, interstitial, vascular and phlyctenular keratitis, tubercle of the iris, iridochorioiditis and iridocyclitis. Waldstein's experience in the clinic at Prague illustrates the fact that instillations should not be made in diseased or inflamed eyes. Seven out of eight cases of eczematous kerato-conjunctivitis reacted positively with intense irritation, chemosis of the conjunctiva, with the typical phlyctenules of the ocular conjunctiva. Old corneal maculæ became inflamed and formed ulcers. In a case of tuberculosis of the cornea with scleritis, the whole cornea, after a second instillation, became gray, and threatened to be destroyed by suppuration. There were two cases of tuberculosis of the iris, and one of lupus of the conjunctiva, in which there were no reactions. There is certainly a strong impression of the uncertainty of the test in general, neither can it be positively inferred that a suspicious eye inflammation is certainly tubercular in character, even if it reacts strongly, because the infected focus may be elsewhere than in the eye. The general impression of the subject may be summed up as follows: "The conjunctival test has fulfilled all reasonable expectations. It is beset with apparent discrepancies which we are as yet unable to explain. It will never take the place of a careful physical examination. It requires caution in its application and interpretation. It is important to try to follow up our cases, so that we may ultimately get an insight into the causes of the failures of the method." Its indiscriminate usage is certainly dangerous and a practice that should not be encouraged. A. F. A.

### The Best Methods for the Diagnosis and Treatment of Ocular Tuberculosis.

Derby, George S. (*Archives of Ophthalmology*, May, 1910), reviews, briefly, the various methods of diagnosis, and remarks that in certain forms of ocular tuberculosis the clinical appearance is of great assistance in making the diagnosis, while in other forms it may be of no help whatsoever. The history and general examination of the patient often furnishes valuable aids to diagnosis and should be very carefully gone into. He states, furthermore, that the previous eye history is of great importance: tuberculosis of the eye is essentially a recurring disease, and he believes that if we question these patients carefully we shall usually get a history of a previous inflammation. His experience has been that most patients present physical signs outside of the eye, and that the majority of cases tend to run a slightly increased temperature. In his treatment, in addition to the general rule, he uses as large a dose of tuberculin as the patient will stand without any sign of reaction, general or local. H. G. G.

### Report of the Committee for the Study of the Relation of Tuberculosis to Diseases of the Eye.

Wilder, William H., Chicago (*Journal of the Am. Med. Assoc.*, July 2, 1910), reports 144 cases studied by the various members of the committee appointed for this purpose. The cases are classified as follows:

| | |
|---|---|
| Blepharitis | 3 |
| Dacryocystitis | 2 |
| Follicular conjunctivitis | 5 |
| Phlyctenular disease of conjunctiva and cornea | 47 |
| Scrofulous pannus | 4 |
| Keratitis (deep and nodular) | 12 |
| Interstitial keratitis | 18 |
| Episcleritis | 4 |
| Scleritis | 3 |
| Sclero-keratitis | 22 |
| Chronic iritis | 3 |
| Chronic iridocyclitis | 7 |
| Uveitis | 6 |
| Chorioiditis | 5 |
| Chorioretinitis | 3 |
| Total | 144 |

Finally he says:

"In trying to arrive at some definite conclusions as to etiology in a group of cases like the foregoing, one should consider carefully the relative value of the means and tests employed in the examination of such cases. If active tuberculosis is present or has been present in lungs, joints or bones, sufficient to cause any marked changes, the condition may be discovered with all reasonable probability by careful physical examination. But if from 90 to 98 per cent. of all persons who have reached 60 years of age have been at some time infected with tuberculosis, as is claimed, then very many have suffered so slightly as not to present signs of the disease that can be determined during life by our methods of physical examination.

If from 90 to 95 per cent. of all persons who have passed the adolescent period of life will respond actively to the sensitive cutaneous test of v. Pirquet, as is claimed, it helps to confirm the statements of the pathologists as to the ubiquitous nature of the disease. This being so, in a given case of eye disease, one could place little reliance on this test as determining the actual etiology of the eye lesion without first positively excluding all other factors, and this is not always possible.

The same criticism would apply to the Calmette test which, on account of its danger in diseased conditions of the eye, one would hesitate to use for ophthalmic diagnosis, even if one eye were sound. Response to this test might prove, as is claimed, the existence of active tuberculosis in some part of the body, but would not necessarily determine the nature of the eye lesion.

In the test by subcutaneous injection of tuberculin, the same difficulties are encountered. A general reaction following this test would only prove that the individual is tuberculous (excluding syphilis, leprosy, actinomycosis), which might be done by the simpler v. Pirquet or Calmette test. If, however, a local reaction in the diseased eye occurs, manifested by ciliary injection, conjunctival redness, or marked aggravation of the previous condition, we have strong presumptive evidence that the lesion in the eye is tuberculous. But the eye may be so inflamed as to prevent us from observing whether or not there is increased reaction, so that the test, if made, should be made when the eye is in a comparatively quiet condition.

Again, this raises the important question whether such structures as the cornea, sclera and uvea may not be thrown into a diseased condition by the toxic substances from the bacilli in a distant focus of tuberculosis, reaching them through the blood and lymph channels, without the presence of the microorganisms themselves in any part of the eye. This being the case, might we expect a local reaction in the eye, even if we encountered a general reaction with the subcutaneous test?

An interesting feature of this series of cases is the frequency of association of tuberculosis in some part of the body with eye conditions, such as phlyctenulosis, deep and interstitial keratitis (non-syphilitic), and sclerokeratitis, and the frequency of local reaction in the eye in such cases, with the use of the subcutaneous test.

In 59 cases of keratitis, episcleritis, scleritis and sclerokeratitis, 56 gave positive evidence of being tuberculous, either by physical examination or tuberculin tests. In 27 of these cases subcutaneous tests were made, and of these 22 were positive as to local reaction in the eye.

If it were possible to study all such cases that appear in a year or two in several large clinics or eye hopsitals, we might arrive at some instructive conclusions as to the frequency of tuberculosis as a cause of such diseases." M. L. F.

### A Clinical Investigation of the Relationship of Tuberculosis to Certain Diseases of the Eye.

DERBY, GEORGE S., and AYER, THOMAS H. (*Journal of the Amer. Medical Assoc.*, May 28, 1910), present a summary of the examinations of 92 cases in which the ocular disease suggested a tuberculous origin. A careful record was made of the family and personal history of each patient, as well as of the present illness. The cutaneous test was then made on the upper arm, at first with a 25% solution of old tuberculin, later with the full strength. In tabulating results the medical examinations are recorded as positive whenever the consultant reported the case as suspicious. In but few of the cases could an absolutely definite diagnosis of tuberculosis be made, and no bacilli were found in the sputum of any patient. The cases are divided into two groups: one in which the ocular inflammation was superficial, one in which the deeper structures of the eye were involved. The first group was composed of 14 cases of phlyctenular conjunctivitis and 52 of phlyctenular keratitis; the second of 6 cases of scleritis, 6 of interstitial keratitis, 4 of uveitis, 7 of sclerokeratitis, and 3 of keratoiritis. The findings are summed up in the following table:

Group I, Superficial ocular inflammations, and Group II, Inflammations involving deeper structures of the eye.

FAMILY HISTORY.

Group I: 66 cases. Positive in 16, or 24.2%.
Group II: 26 cases. Positive in 5, or 19.2%.
Whole Series: 92 cases. Positive in 21, or 22.8%.

### TEMPERATURE.

| | | |
|---|---|---|
| Group I: | 66 cases. | Elevated in 26, or 39.3%. |
| Group II: | 26 cases. | Elevated in 12, or 46.1%. |
| Whole Series: | 92 cases. | Elevated in 38, or 41.3%. |

### SUSPICIOUS SIGNS OF TUBERCULOSIS.

(Lungs, glands, local reaction to subcutaneous test, etc.)

| | | |
|---|---|---|
| Group I: | 66 cases. | Positive signs in 32, or 48.5%. |
| Group II: | 26 cases. | Positive signs in 18, or 69 %. |
| Whole series: | 92 cases. | Positive signs in 50, or 54.3%. |

### REACTION OF TUBERCULIN.

| | | |
|---|---|---|
| Group I: | 66 cases. | Positive in 59, or 89.3%. |
| Group II: | 26 cases. | Positive in 24, or 92.3%. |
| Whole series: | 92 cases. | Positive in 85, or 90.2%. |

M. L. F.

## The Noguchi Serum Reaction for Syphilis as an Aid to Diagnosis in Eye Lesions.

BULSON, ALBERT E. JR., Fort Wayne, Ind. (*Jour. of the Amer. Med. Assoc.*, July 16, 1910), tabulates the histories and results obtained by the Noguchi reaction in 26 patients.

An analysis of these cases shows that of the thirteen positive reactions ten were in patients giving no definite history of syphilitic infection, and only two of the eight showed other than eye lesions to indicate syphilitic infection. Seven of the number had received antisyphilitic treatment and probably to the treatment may be attributed some of the weak positive reactions secured.

Of the thirteen negative reactions, six were in patients who gave no history of syphilitic infection and received no antisyphilitic treatment. One patient denied infection, but presented many evidences of secondary manifestations of the disease and was kept on mercurial inunctions for a period of two years previous to the test and constantly improved under the treatment. She gave a negative Noguchi reaction, and no doubt the vigorous mercurial treatment and absence of active syphilitic lesions prevented a positive reaction. The same is true of another patient.

Four patients giving a history of syphilitic infection and treatment of the same probably gave negative Noguchi reactions because of the effect of the treatment. The lesions existing at the time of the tests were probably not syphilitic.

Patients suffering from or having suffereed from interstitial keratitis would be expected to be syphilitic, and hence the Noguchi reaction in such cases would be positive except for the inhibiting influence of the treatment. The test in those cases, therefore, would be essentially valuable as indicating whether or not treatment should be discontinued or resumed.

In several cases no syphilitic reaction could be obtained; there were no lesions other than those in the eye, and the cause was questionable. In these the serum reaction was considered satisfactory in determining the possibility of a syphilitic etiology, and the results of subsequent treatment seemed to establish the reliability of the findings. Thus in one case the test was strongly positive and antisyphilitic treatment not only produced marked improvement, but the reaction became weakly positive six weeks later. In another, unquestionably syphilitic, the negative reaction was considered an indication for the cessation of treatment, which has lasted two years. Another case would ordinarily have been diagnosed as syphilitic iritis, but the Noguchi reaction was negative and the patient recovered rapidly on nonsyphilitic treatment. M. L. F.

### Does Optic Atrophy in Tabes Develop From a Disease of the Ganglion Cells, or From the Nerve Fibers?

RONNE, HENNING, Copenhagen (Translated by Edw. C. Sewall, San Francisco, Cal., *Ophthalmology*, April, 1910), says that help in the solution of this question may be obtained by the study of certain similar characteristics of the fields of vision in tabes and in certain diseases of the eye, such as glaucoma. In glaucoma we find a field of vision that lies on the chart so that the edge runs for a certain distance exactly in a horizontal line along the nasal meridian. This peculiarity gives us a means of settling the differential diagnosis between a disease of the cell layer of the retina itself and of the optic nerve fibers, because a disease of the retinal cells would not respect certain nerve bundles which merely in anatomical relationship lie in the conducting part of the nerve bundle. A disease which shows this characteristic must be in the nerve fiber. The three charts of visual fields given in the paper, from the writer's cases, are very like the glaucoma fields of Bjerrum. This similarity in the fields will be found more frequently if more care is taken in searching for them. Hence, it would seem that the nerve fiber is affected before the ganglion cell itself. As optic atrophy is quite analogous to the atrophy which progresses in the other sensory tracts in tabes, one can draw the conclusion that the same conditions prevail in one instance as in the other, and can formulate the general statement that the lesion of the ganglion cells in tabetic degeneration is a much less important factor than the involvement of the nerve fiber. A. F. A.

### Ocular Palsies in Tabes.

Posey, William C., Philadelphia (*Jour. A. M. A.*, April 16, 1910), gives an excellent review of the literature on this subject, to which he contributes the histories of two or three cases. M. L. F.

### The Ocular Palsies Associated With the Induction of Spinal Anæsthesia by Various Solutions.

Reber, Wendell, Philadelphia ( *Jour. A. M. A.*, July 30, 1910), reports five cases of this nature and reviews the literature. He divides these cases into three groups, according as they show involvement of one abducens, both abducens, or the trochlearis and oculomotor in addition to the abducens. He then analyzes the tabulated cases with regard to the alkaloid used, the dose, the muscle affected, the interval between the spinal anæsthesia and the appearance of the palsy, the duration of the palsy and the frequency of recovery, the pathogenesis of the condition and the frequency with which the surgeon may expect it to occur as a complication.

M. L. F.

### Toxic Amblyopia of Diabetic Origin Occurring in a Young Woman —A Rare Symptom of the Toxæmia of Diabetes.

Reber, Wendell, Philadelphia, Pa. (*Ophthalmic Record*, March, 1910), saw a woman, aged 29, October 13, 1907, who complained of having trouble with her eyes when reading or sewing at night. Six months previously she had been told that she was the subject of glycosuria. She was wearing glasses that gave her a vision of 5/9 in each eye, which could not be improved. Perimetric tests of both visual fields showed that for a 5 mm. red object there was a rather indefinite relative blind spot in the center of each visual field, and with a $2\frac{1}{2}$ mm. red object a quite definite one reaching about 7° toward the normal blind spot in each eye could be demonstrated. There were no color reversals in either field. This case has been under close observation for two years, and there has been no complete disappearance of the scotoma in either eye. Vision is still 5/9, and the findings in the urine are the same as two years ago. O. W.

### Psychoses Associated With Ocular Affections.

Risley, Samuel D., Philadelphia (*Ophthalmic Record,* March, 1910), reports four cases which are illustrative of the fact that loss of mental balance is sometimes due to eye trouble. Case I. A woman, 32 years old, an inmate of an asylum for the insane, classed among the incurably insane, had always been nervous and suffered with headache which was aggravated or caused by reading. Examination revealed a low degree of hypermetropic astigmatism with asymmetrical corneal meridians, low range of accommodation for her age, and retinochorioidal irritation. Soon after she received glasses correcting these defects both her headaches and mental delusions vanished, and she was able to return to her home. During nineteen years which have intervened since she has had no return of her mental delusions.

Case II. A teacher of chemistry, who had long suffered with occasional disturbance, for which many oculists had prescribed glasses and performed tenotomies of the ocular muscles without affording relief, had little pain in the head or eyes, but was compelled to stand constantly at attention, "like a soldier on parade," in order to avoid crossed diplopia. He was subject to hallucinations and lost his mental grasp when reading. Examination revealed an absolute exophoria, slight hyperphoria and an apparently simple myopic astigmatism for which he was wearing concave cylinders which gave him vision 6/5 in each eye. The prolonged use of a mydriatic proved that the astigmatism was hypermetropic instead of myopic. Advancement of the internal rectus muscles corrected the tendency to diplopia. After this, prolonged near work caused headaches, but as the ocular balance became normal through adjustment of the scar tissue at the site of the operation the headaches disappeared. He has had no return of his hallucinations and has regained his mental grasp.

Case III. A sister of case II, suffered with insomnia, vertex pain, weak eyes and hallucinations. Blurred vision sometimes lasted for over two hours. She, as well as her brother, feared loss of her mental control, and she described an inclination to injure anyone who happened to be near her during these attacks. She had hypermetropic astigmatism in each eye, a relative exophoria and 2½% of left hyperphoria. Her correcting glasses included a prism for the left hyperphoria, and training with prisms cured the exophoria. Her hallucinations and insomnia disappeared, fortification scotoma returning at lengthening intervals, but at the last report she had not had one for a long time.

Case IV. A woman, aged 32, a victim of nervous exhaustion, suffering with insomnia and violent occipital headache. Her trouble began with severe eye pain while a schoolgirl. She had a high hypermetropic astigmatism, higher on the right side. She also had esophoria and 4° left hyperphoria. The refraction error was corrected with glasses, but little relief was obtained until the vertical imbalance was removed by a tenotomy, which completely adjusted the binocular balance. Since then she has been entirely free from trouble. O. W.

### A Case of Herpes Zoster Ophthalmicus.

Clarke, Edwin A., Colorado (*Ophthalmic Record,* April, 1910), reports a typical case occurring in a man 80 years old. The location of the eruption corresponded to the area of distribution of the ophthalmic branch of the fifth nerve, the vesicles being most numerous on the forehead, upper lid and extending to the nose. One vesicle in the center of the edge of the upper lid ulcerated and destroyed the thickness of the lid, leaving a circular opening which exposed the cornea when the lids were closed. This part of the cornea also became ulcerated and caused loss of the sight of that eye. The patient passed from observation before other featurees of the case could be recorded; he died about a year later. O. W.

### A Study of the Eye in Mental Defectives.

Clark, L. Pierce, and Cohen, Martin, New York (*Jour. A. M. A.*, April 16, 1910), conclude that there is probably a well-marked tendency to neural as well as psychic degeneration in the great majority of all grades of idiots, because of the degenerative changes to be seen in the fundus of a very great percentage of idiots, feeble-minded and imbeciles.

M. L. F.

# ABSTRACTS FROM ENGLISH OPHTHALMIC LITERATURE.

(GREAT BRITAIN AND THE ENGLISH COLONIES.)

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MONTREAL.

### Visual Sensation, Perception, Appreciation and Judgment.

DOYNE, ROBERT W. (*Ophthalmoscope,* July, 1910). The author gives a very interesting sketch of the physiology and psychology of vision, which deals with the production of what we call sight, and irregular conditions arising from diseases or congenital peculiarities that come under the heading of mind blindness, including, as it does, word blindness and allied conditions, and also touches on the brain conditions, so far as sight is concerned, that go to produce a second-class or a first-class mind.

Simply stated, the impressions of the waves of ether are conveyed from the eye to the cortex of the occipital lobe in the neighborhood of the calcarine fissure of each side and on to the neighborhood of the angular gyrus, giving rise to a sense of light and of form, while certain impressions are conveyed from both sides to other parts of the brain cortex, near the left angular gyrus, and are there stored up as memories to be made use of by the center in the frontal lobe as forming visual judgment.

The form sense entails a very much more elaborate physiological process than light sense, for to receive the former means invoking the aid of the ocular motor apparatus in controlling the co-ordination of the eyes and focusing them, as well as reference to the sense of touch. A case is cited where, from disease, the sense of light, without a trace of form sense, remained. Patient was a man 72 years of age, complaining of inability to see people or forms, but of a constant white glare. The disks were pale, but not papery-white, he co-ordinated his eyes and had not the appearance of a blind man. He could see a sheet of paper as a white glare, and would tell the number of artificial lights in a room by the glares in different directions. If the illumination were good, he could tell how many men were seated in front of him at dinner by a sense of glare from their shirt fronts. The only intelligible interpretation seems to be that he had lost all visual impression, save only that of light.

The writer is inclined to believe that differentiation of color takes place in the brain, rather than in the retina. In retinitis pigmentosa differentiation of color is often preserved as long as a vestige of light perception remains, while in atrophy of the disk from a descending cause, such as tabes, perception of red and green is sometimes lost before visual acuity to form sense is affected to any great extent. Much of Edridge-Green's work on color blindness goes to prove this also. The writer has carried out a set of experiments by means of a rather ingenious arrangement, in which he photographs the pupil in its response to the various colors of the spectrum. He found the pupillary reaction infinitely greater at the violet end of the spectrum and regularly declined in degree as the red end was approached.

As suggesting that the color center is independent of the centers for light and form, the case of a railway signalman is given. Following an attack of tetanus he was found, upon return to duty, to be absolutely without color sensation.

Malingering was eliminated; he had done his work for many years without the least difficulty in distinguishing the signals, but after his illness he found on looking at the signals that he was unable to distinguish what they were. This case would seem to support the view that there is a separate center for color, which in this patient had been destroyed.

We go now to the center, or centers, for visual memory. A child learning his alphabet is told that certain marks represent the letter A. The impression of the letter A is then formed on the cortex of the occipital lobe, half in one side and half in the other side of the brain. The impressions from each side are then carried to another part of the cortex in the region of the angular gyrus on the left hemisphere and there stored up for future comparison, thus linking the two sides of the brain in one common center. Coincidentally with this an impression is carried from the lower center for hearing to the center of oral memory of the sound A, association fibres connecting these two centers of visual memory and oral memory. Later the child's attention is again drawn to the letter A. This again impresses the lower visual center of the cortex of the occipital lobes, but on this occasion the highest center in the frontal lobe, which has association fibres with all the lower and higher centers, recognizes that there is stored up in the center for visual memory an object of the same appearance, which is linked up with the oral center, which attributes the sound of A to that object. This volitional center gives stimuli to the various centers that are associated with the act of speech, and the child repeats the word A. Similarly letters are linked into words, the words stored up, and so on with longer words, which are afterwards recognized as being composed of single letters, or may be recognized as complete words, the one being obviously a quicker process than the other. For more general objects, faces, etc., it is probable that the response is shared between centers on both sides of the brain in the neighborhood of the angular gyrus. Possibly only those objects that are incomplete without the association of sound, and consequently of speech, are relegated to a special center for their more compound appreciation. We may have a lesion in the course of the nerve fibres from the lower centers in the calcarine fissures, to the center for visual memory, in which case a patient would be able to see a letter, be able to describe it and to draw it, but not able to recognize that it is the letter A. If told to write the letter A, he will do so correctly, but having written it would be unable to recognize that it is the letter A. Should the lesion be actually at the center of visual memory, he would be unable to write the letter A, the visual memory having been destroyed. A lesion occurring in the course of those fibres, from their position might easily include also the direct fibres from the eye to the left calcarine fissure, in which case the individual would also have a right homonymous hemianopsia.

In illustration, a case of a patient is recalled who showed loss of memory of words, letters and numerals. He was able to write down a letter when told to do so, but unable to recognize it when he had written it, showing that the center for memory of letters was not destroyed, but the fibres leading to it. He also showed word dumbness. He knew what he wanted to say, but could not say it. He was able to recognize people whom he knew, but was not able to say their names. From which we can conclude that the connections of the lower visual center with the center for objects of the right and left side of the brain was intact, but the association fibres with the center for names and the association fibres of the center for names with that of speech were interrupted. He could draw the picture of a person whom he had seen, showing that the association fibres to the center for writing or drawing were intact. This loss of power to recognize objects is generally called mind blindness, and the other conditions, which are subdivisions of this, are spoken of as word blindness, letter blindness, word dumbness, etc.

Those congenital forms of trouble that go by the name of word blindness, letter blindness, figure blindness, music blindness, etc., and what is commonly associated "word dumbness," are really not disease at all, but are rather to be regarded as a lessened potentiality of the brain in these particular directions. The gray matter concerned in these various operations is less present. Either the fibres connecting the lower to the special centers are of low order of conductivity, or the cells of the center itself are poor and insufficient. The aural apparatus in the centers may be excellent, and a child who has taken a long time to learn to read may quickly appreciate what he was told and will learn his lessons by repeating them aloud. A case is cited illustrative of word blindness combined with word dumbness. Patient had been very slow at learning to read, and reads badly now. Such words as "mighty" he would reproduce as "great," and so on, the meaning having been grasped, but the speech center not being so ready and capable of reproducing the conception. The minor degrees of word blindness are well illustrated by people who take a long time reading a book, compared with those who can skim over words and realize their gist with great rapidity.

After reading anything through, there are two ways at least in which the subject matter can be reproduced to the mind of the reader. He either sees, and, as it were, re-reads what he has seen before, or he reproduces the subject matter from its relation to mental conclusions and associations. The one is, so to speak, parrot-like, relying upon his visual memory, the other thought out, relying upon a still higher brain center—or, as in most cases, relying upon both. The master mind is his whose higher brain center has plenty of gray matter of good quality, and is in close and ready association with all the other brain centers, so that his grasp is wide and his judgment good, whereas the other may have only a splendid center for memory and have no power in dealing in his higher physiologic center with the remembered facts. Of course, he who has not only good memory centers, but also a highly developed intellectual center is best of all.

In conclusion, a case is mentioned of a man now dead, whose visual memory was so good that he could read a newspaper article once through, put down the paper and repeat it word for word. This man, as it happened, had a very fine intellect as well. W. R. P.

### Observations on Conjunctivitis.

DOYNE, ROBERT W. (*Lancet*, June 18, 1910). The author remarks upon the enormous number of varieties that from the text-book standards might be enumerated and whether the simple facts of conjunctivitis might not be lost sight of in the morass of nomenclature.

The conjunctivitis produced by the Koch-Weeks bacillus; the streptococcus as a factor in Parinaud's conjunctivitis; the Morax-Axenfeld diplobacillus; the gonococcus; the bacillus of leprosy; streptococcus aureus, and the Klebs-Loeffler bacillus are referred to in the order enumerated. Of the treatment of the above conditions, zinc is recommended, of course, for diplobacillus conjunctivitis. Of gonorrheal ophthalmia Doyne says: "I believe the keynote is cleanliness and masterly inactivity. Once the tissue has become infected, nothing, I believe, tends to clear it but self-immunization. I think one should be satisfied with gently flushing the palpebral fissures and eyelashes and wiping therefrom any adherent discharge. One cannot get rid of the infection by flushing out the sac, and any good one may do in that direction is far more than counterbalanced by the damage to the epithelium that is occasioned thereby. Instillation of a drop of argyrol at intervals may be of advantage. Than this and general cleanliness I would suggest nothing more. If the pressure of the swollen lids becomes very great, division of the external canthus might be of advantage."

Of trachoma, he says: "There is no doubt that it is contagious, though I do not believe it is so to anything like the extent that it has been generally supposed.

"My experience in hospital work places me in a peculiar position for forming a judgment. I have been for over twenty years surgeon to the Oxford Eye Hospital, a country district, and at the same time for over ten years to the Royal Eye Hospital, Southwark. A case of so-called follicular conjunctivitis seen in London I would know would resolve itself, almost to a certainty, into trachoma. The same sort of case seen in the country I would be equally certain would recover completely without further symptoms. As a further illustration of this, I may mention that in the workhouse at Abingdon, sleeping in a dormitory with a large number of other children, was a case of severe trachoma, accompanied by pannus and free secretion. The case from its history had obviously been going on for a year, and yet not one of the other children was affected. Such a thing could not have gone on in a London workhouse school without general infection taking place."

Conjunctivitis associated with enlargement and increase in number of the lymphoid follicles is next considered. This is followed by localized conditions, such as primary syphilitic infections, tubercles and conjunctivitis excited by the hairs of certain caterpillars. Spring catarrh is followed by the irritative condition produced by the primula and dahlias, and that form, the result of exposure to naked arc light.

The conclusion is, the main point in treatment is a "masterly inactivity." The infective condition gets well by a power of self-immunization, not because you have irrigated the eyes with astringents. "I kept statistics of a large number of cases treated with astringents, with boric lotion, and with plain water. The astringents came last, the boric lotion and water were about equal in time of recovery. The one exception to these general remarks is the diplobacillary infection, which is promptly destroyed by sulphate of zinc. Sometimes the conditions relapse or may become chronic, immunity not being completely gained, and then stimulation seems to answer, more blood is brought to the part, old cells are cast off and the microorganism is more effectually dealt with by the leucocytes. Phlyctenular conjunctivitis only requires fresh air under all conditions and in all weathers." N. M. B.

### The Operative Treatment of Glaucoma.

Elliot, Major R. H. (*Ophthalmoscope,* July, 1910). The results of 128 operations for glaucoma, by means of the Bowman trephine, are given in tabulated form and the conclusions drawn therefrom. Many of the cases were examined after an interval of three months following the operation, and uniformly good results noted.

The operation may be performed under the local influence of cocain and adrenalin, dropped into the sac. If there is much pain or congestion, or if the patient is unruly, a hypodermic injection of morphin may be given twenty minutes before the operation. In recent cases subconjunctival injections of cocain and adrenalin have been used with excellent results. The patient looks down, and a large triangular flap of conjunctiva is dissected up from above the cornea, the attached base of the triangle lying in the sclerocorneal margin. Experience has shown the importance of dissecting this flap right up to the limbal attachment of the conjunctiva. The flap is turned down on the cornea. The spot selected for the trephining should be as close to the limbus as possible, and should be prepared by using the scissor points freely, either cutting or scraping, or both, right down to the scleral coat. It is important that no conjunctival tissue be left, as otherwise it will catch in the trephine and tend to draw the flap into the latter as it is working. The globe is steadied by pressing on the cornea through the down-turned flap, which is quite sufficient to effect the purpose of keeping the eye at rest in the proper position. The trephine is used with quick, light movements, and care is taken that its first application suffices to bite into the sclera, before it is raised to see the progress made. Once a clean ring is thus started, it is very easy to replace the trephine in it. At first the operator feels the need of frequently removing the trephine to watch progress, but he soon learns to know by the feel when he is through. As soon as the anterior chamber is tapped, aqueous fluid wells up alongside the trephine; even apart from this, there is a curious sucking sensation which tells one the trephine is through. Moreover, the patient often helps by a slight movement due to the pain (seldom severe) which attends the completion of the section. The conjunctival flap is replaced "in situ" to see whether the iris is in position or not. If it is, and if there is no bulging of its base into the wound, the eye is at once closed. It sometimes happens that the iris bulges into the section the moment the disk is cut through; if so, it is snipped with scissors to let the aqueous fluid escape, and it then often goes back of itself. If it does not, then an iridectomy is performed. As a rule, a very small and peripheral section of the membrane suffices; more rarely it is necessary to make the iridectomy complete. Eserine drops are instilled into the eye after operation, if for any reason we fear a prolapse may take place. As a rule, no drops whatever are used immediately after the operation. A Bowman trephine either of 2 mm. or 2.5 mm. diameter was used throughout. Major Elliot differs from Dr. Freeland Fergus, whose work forestalled him by a few months, in that he adheres strongly to the simple operation, while the latter combines with it a cyclodialysis.

The points emphasized, which are considered of primary importance in the operation are:

1. The dissection should be very close up to the limbus, keeping the point of the sccissors directed towards the plane of the posterior pole of the lens, undermining the limbus and making a groove, overhung by the latter.

2. With a sharp trephine a clean disk can be quickly and easily cut out, frequently remaining attached at one small point, which is severed by a snip of the scissors. The author makes a point of pressing a little more on the corneal than on

the scleral edge of the disk, so as to make sure of entering the chamber as far forward as possible.

3. A clean disk, cut out without undue pressure of the trephine, seldom requires interference with the iris.

4. A Bowman's trephine is easily sterilized and readily sharpened after the method of Craggs, who removes the guard of the trephine, inserts it into the cutting end of the instrument, and by up and down movements sharpens the edge of the instrument from within.

5. In all the Madras operations two Bowman trephines were used—one of 2 mm., and the other 2.5 mm. cutting diameter. Their leaning is at present towards the latter.

The total number of operations under review was 128, of which 57 were for primary noncongestive glaucoma, 40 for primary congestive glaucoma, 25 for acute glaucoma, secondary to the changes which may occur during the maturation of the primary cataract, and six were secondary operations. In 86 operations the flap was placed and the trephining done above the cornea; in 39 below the cornea; and in three it was lateral. The indication for the flap to be placed below or at the side was in all cases a combination of a blind or nearly blind eye, with intractability on the part of the patient. The operation was done under the influence of scopolamin and morphin, and cocain in 16 eyes, while cocain combined with adrenalin was the local anesthetic in 109 eyes. Such excellent results were obtained in one case by the subconjunctival use of cocain and adrenalin that it is being given a more extended trial. Escape of vitreous was experienced in only 4.68%, usually due to placing the trephine hole too far away from the limbus. Failure to enter the anterior chamber occurred in five cases, whereupon a fine curette was pushed into the anterior chamber to tap the aqueous; of these four did well, the fifth required a second operation to remove impacted iris. Iridectomy was performed on 65 occasions—small and peripheal in 57, and large and complete in eight cases. A McKeown's irrigator was found of great service in washing back the iris into the chamber on completing trephining. Any difficulty in so replacing the iris or any tendency to reprolapse was taken as an indication for iridectomy.

The postoperative complications experienced were:

(1) Failure of lowering of the tension, necessitating a secondary trephining in four eyes.

(b) Removal of prolapsed iris in two eyes.

(c) Displacement of iris toward aperture during convalescence, not calling for operative interference, in 10 cases.

(d) Formation of posterior synechiæ without pain or other signs of iritis, in two cases.

(e) Failure of chamber to reform in 24 hours, in 18 cases.

Eserine is seldom instilled now except in cases where prolapse is feared, and where the pupil shows a tendency toward contraction; during convalescence atropin is freely exhibited. In only one case did operation fail to immediately lower the tension, and in that case a subsequent operation did this effectually. The visual results speak favorably for the operation W. R. P.

### A Pedigree of Five Generations of "Blue" Sclerotics.

Harman, N. Bishop (*Ophthalmoscope,* August, 1910). An interesting pedigree is shown, with diagram, of five generations of "blue" sclerotics. The condition is described as a "curious, uniform, bluish tinge, perhaps best described as 'leaden.'" It extended to the cornea and beyond the equator of the eyeball, showing no accentuation in the ciliary region. The fundi were well pigmented; the optic disks of oval shape, and a congenital crescent (the so-called "Fuchs" coloboma) was present at the lower margin of each papilla, and was found in nearly all subjects.

The author agrees with Peters that the peculiar color of the sclerotic is due to its unusual thinness. The coloration was stationary, present at birth, and did not change with age.

The investigations made up a large pedigree, covering over 55 individuals, of whom 31 are known to have the same congenital peculiarity.

The disproportion of the sexes is shown, in that there were 12 males and 18 females. The inheritance was always through the females. Only one affected male married and had issue, and these children are reported to be unaffected.

W. R. P.

### The Bacteriology of the Normal Conjunctiva in Its Relation to Intraocular Operations.

Mayou, Stephen (*Ophthalmoscope*, August, 1910). The author limits his remarks to the bacteriology of the normal conjunctiva, more especially in relation to ophthalmic operations. A number of cases, examined immediately before operation by taking cultivations from the conjunctival sac, have grown staphylococcus albus, aureus, and pneumococcus. Although these organisms were present at the time of operation, no sign of inflammation showed itself in the eye subsequently. Inflammation may follow operation wounds, however, quite apart from any faulty technic on the part of the surgeon. This depends: First, on the number, virulence and nature of the organisms introduced into the globe; secondly, on the position and nature of the wound.

(1) *The Number, Virulence and Nature of the Micro-Organisms.*—The number of organisms introduced into a wound may be a determining factor in the production of inflammation. Constantly washing out the conjunctival sac with a mild antiseptic solution, as a 1 in 6,000 perchloride of mercury or boracic acid, four times daily for three days, almost invariably were sterile. The test of padding the eye the night before an operation is a bad one, as the closing of the conjunctival sac leads to increase in the number of organisms. If this test is used it should be applied two or three days before the operation.

Nearly all the organisms which are found in the so-called "normal conjunctiva" are comparatively nonvirulent. It has been proved that pyogenic organisms do not always cause suppuration, and it probably depends on the virulence of the organism whether a serous, plastic or suppurative inflammation takes place in the eye which has become infected. Infections from streptococcus and other virulent organisms are not nearly so frequent as infection from the usual inhabitants of the conjunctival sac.

The two common organisms, staphylococcus albus and bacillus xerosis, occur in 80 to 90 per cent of cases. The bacillus Morax-Axenfeld and the pneumococcus occur in about 8 per cent, more rarely the staphylococcus aureus, bacillus subtilis and streptococcus. The staphylococcus albus is by far the most common cause of inflammatory trouble after operation. The lesions produced in the eye resemble those produced by the organism in the skin, as in acne vulgaris, in that they may produce either a suppurative or a nonsuppurative inflammation, according to the resisting power of the patient. The pneumococcus is a comparatively common cause of suppuration after operation, usually associated with lacrimal obstruction. The streptococcus causes a very acute suppurative inflammation, but its occurrence is rare. The bacillus Morax-Axenfeld, bacillus subtilis, and possibly xerosis bacillus form a group of organisms which, although nonpyogenic in the conjunctiva, have been described as producing suppuration in the globe.

(2) *The Position and Nature of the Wound in the Globe.*—The ophthalmic surgeon is operating in an area in which he can never be absolutely sure of his asepsis. The less frequently he makes wounds into the globe, consistently with the general object of the operation, the less the risk of septic complications. Instruments which have touched the conjunctiva before being introduced into the interior of the eye should, as far as possible, be sterilized.

Rapid shutting off of the wound in the globe from the conjunctiva is of extreme importance, hence the incisions should be made as obliquely as is possible, and wherever possible a covering by means of a large conjunctival flap should be obtained. A fistulous opening into the globe is the commonest predisposing cause of intraocular inflammation following operation.

The presence of blood-clot and soft lens matter facilitates the growth of organisms in the wound, hence the importance of washing out the anterior chamber after cataract extraction to remove the soft lens matter and blood-clot, as far as possible.

Organisms multiply better in the vitreous, where there is no aqueous to wash them away, and which does not (at least in the early stages) contain the protective bodies which are present in the aqueous after evacuation. W. R. P.

### Some Ophthalmic Conditions Caused or Influenced by Diseases of the Upper Respiratory Tract.

Cobbledick, A. S. (*British Medical Journal*, May 28, 1910, p. 1282). This article is composed of a series of excellent clinical observations covering a rather wide field. The author first lays stress upon the fact that postnasal obstruction, adenoids, etc., frequently complicates recurrent corneal ulceration in children. Dacryocystitis is most frequently caused by diseased conditions of the nasal mucous membrane, bony necrosis due to tertiary syphilis, anterior ethmoiditis, "and possibly nasal polypi." The accompanying conditions of rhinitis and chronic otorrhea in connection with chronic conjunctivitis and blepharitis are mentioned. Refractive errors and adenoids commonly co-exist, and the correction of the refractive error before the removal of the adenoids "is not always satisfactory." The asthenopic symptoms may persist.

"In cases of sudden loss of sight in one eye caused by retrobulbar neuritis, or in unilateral optic neuritis where there is no evident or ordinary cause, suspicion must fall on the sphenoidal sinus." Proptosis and diplopia are frequently caused by ethmoiditis or empyema of the antrum. Finally, "a certain proportion of cases of both acute and chronic iridocyclitis, which cannot be ascribed to syphilis, tubercle, gout or gonorrhea, may be caused by septic processes in the mouth and nose." E. S. T.

### The Board of Trade Sight Tests.

GALLOWAY, A. RUDOLF (*British Medical Journal,* April 16, 1910, p. 915). The author cites twelve cases of color blindness and comments on the methods employed by the Board of Trade "lay examiners." He lays especial stress upon the necessity of the tests with the lamp in doubtful cases who have passed the tests by the Holmgren wools. E. S. T.

### A Note Upon Phlyctenular Affections of the Eye.

STEPHENSON, SIDNEY, AND JAMIESON, J. A. (*British Medical Journal*, April 16, 1910, p. 917). The authors mention the old theory that phlyctenular affections are tubercular, and speak of the revival of this idea. The main facts which have led to this change of opinion are:

1. The frequency with which a family history of tubercle can be obtained from the subjects of phlyctenular disease.

2. The frequent coexistence, along with phlyctenular disease, of other manifestations of tuberculosis.

3. The fact, as shown by the experimental work of J. B. Nias and Leslie Paton, that the blood of patients suffering from phlyctenular disease behaves in a manner which is typical of a definite tuberculous infection. As the result of examination of the blood in upwards of fifty patients with phlyctenular disease, these authors claim that their observa-

tions of the opsonic index go far to support the hypothesis that phlyctenular ulcers are due to the escape of attenuated or dead bacilli from some distant focus.

4. The positive result obtained by employing the Koch, Wolff-Eisner-Calmette-von Pirquet, or other specific test for tubercle.

Twenty cases were tested by the von Pirquet method, and a reaction obtained in every case. Fifty per cent of these cases gave more or less obvious signs of tubercle, while 75 per cent gave a family history. E. S. T.

### On Mucocele of the Nasal Sinuses and Its Complication by Optic Neuritis.

Fullerton, Robert (*British Medical Journal*, April 16, 1910, p. 917). The author reports two cases of mucocele of the ethmoid cells, and one of the left frontal sinus involving the anterior ethmoid cells. The cases showed the usual features and were operated on with good results.

E. S. T.

### The Inequality of the Papillœdema in Certain Cases of Increased Intracranial Pressure.

Ley, R. Leonard (*British Medical Journal*, April 16, 1910, p. 919). The author advances the theory that the inequality of swelling in certain cases of increased intracranial pressure is due to the "normal" difference in tension between the two eyes, and that the eye with the higher degree of tension is apt to have the lower degree of swelling. E. S. T.

### A Case of Cerebro-Spinal Rhinorrhœa with Double Optic Atrophy.

Pike, Norman H. (*British Medical Journal*, May 7, 1910, p. 1104). The patient was a woman of 22. At the age of 12 she had had a severe attack of illness, lasting nearly twelve months. The chief symptoms were severe headache, drowsiness, frequent convulsions and stiffness at the back of the neck. The eyes became prominent, and at the end of the illness she was blind. Epileptiform attacks continued after the illness. At the time of the first examination there was a condition of complete postneuritic optic nerve atrophy, and a continuous discharge of watery fluid from the right nostril, which upon chemical examination proved to be cerebrospinal fluid. After nine months' observation the condition remains unchanged. E. S. T.

### Miners' Nystagmus and Formic Acid.

PERCIVAL, A. S. (*Ophth. Rev.*, August, 1910). Having heard that formic acid had been recommended in paralysis agitans and kindred disorders, Percival tried it on some cases in the Eye Infirmary at New Castle-upon-Tyne, enjoining the patient to give up work underground. One case is reported where the patient did not discontinue work, who reported cured after some months. Another case, "with a persistent nystagmus that could not be stopped for a moment, even after screwing up his eyes. He had been off work for 18 months and had been regularly treated at another infirmary. It was the most marked case I have ever seen after a period of rest. I gave him m. v. of formic acid (25% solution) in water three times a day. The next week I increased the dose to m. x., and the following week the nystagmus was only elicited on his looking upwards. He is now working above ground." N. M. B.

### Chronic Tuberculous Iridocyclitis.

BREWERTON, E. (*Ophth. Rev.*, August, 1910). Two cases, treated throughout the course of the disease in the second eye, the first having been already lost, are reported.

In spite of the treatment the other eye was lost.

The first case, although a diagnosis of tuberculosis had been made in the early stage, tuberculin was not used, owing to the danger of local reaction. In the second case tuberculin was used with a decided improvement for a time, but loss of the eye in the end.

The point the author wishes to bring out is the advisability of early treatment with tuberculin in all cases of chronic iridocyclitis when the type of the disease is suggestive of tubercle and when syphilis can be excluded by Wasserman's test.

N. M. B.

### Penetrating Injury of the Eye Globe with Panophthalmitis Due to a Gas Forming Micro-Organism.

JAMES, R. R. (*Ophth. Rev.*, June, 1910). Boy of 11 years injured by dart from air gun. Seen the evening of the next day. There was moderate edema of upper lid, slight chemosis below cornea, a long crescentic shaped wound just out of midcorneal line, which was opaque gray, and upon raising upper lid "absolutely clear bubbles of gas" issued from wound. The eye was enucleated and contained the dart. Smears from wound showed numbers of "large Gram positive bacilli of a length of 1-3 u. lying singly." Inoculation of a rabbit intravenously proved these to be the B. Aerogenes Capsulatus.

James thinks from the description from France of such cases due to the bacillus perfringens that this is another name for B. Aerogenes Capsulatus. Cases have been reported by Chaillons, Darier and Oreste. N. M. B.

### Macular Region in Children.

Butler, T. Harrison (*The Ophthalmoscope*, June, 1910). After speaking of how rarely one sees mention of this condition in the text-books, the author states: "The reason appears to be that in the past tuberculosis of the chorioid, especially in children, has been regarded as a progressive disease, and one associated with general dissemination of miliary tubercle and with tuberculous meningitis." He also believes that the foci of chronic chorioiditis, which the use of the tubercular test now proves to be tuberculous in origin, have in the past been described as congenital malformatoins, or as a remote result of inherited syphilis.

During the past three years eight examples have come under the notice of the author in an experience of 5000 new patients. All the cases had similar characteristics—a patch of quiescent chorioiditis or chorioidal atrophy, in some cases excavated, generally surrounded by pigment, situated at or near the macula, occurring in patients showing none of the signs or symptoms often described in the older books as "strumous or scrofulous." In no case has there been any keratitis punctata, vitreous opacities or any sign of chronic cystitis.

The early stage is either a single solitary tubercle or an aggregation of three or four medium size tubercles. The central vision is almost always very poor, the optic disk showing atrophy of the macular bundle.

The use of tuberculin has clearly demonstrated that some of the cases were essentially tuberculous in nature, and the similarity of these which were not tested with tuberculin to those which were so treated is so striking that the author regards them all as examples of obsolescent tubercle.

The history of seven cases concludes the article.

W. R. P.

### A Note on Phlyctenular Disease.

BYWATER, H. HOWARD (*The Ophthalmoscope,* June, 1910). The author gives the results obtained in twelve cases of phlyctenular disease on whom he applied the Moro tuberculin test. The ages of the children were from 3 to 14 years; there were 7 females and 5 males. In every one of these cases a positive result was obtained.

Moro distinguishes the positive reaction as being of three grades: (1) Weak; (2) medium-strong; (3) strong. In the author's cases two gave a weak, nine a medium-strong, and one a strong reaction. The last case was one of severe phlyctenular keratitis. No general symptoms followed the test. There was a family history of pulmonary tuberculosis in six cases. In no case was there evidence of phthisis, but other signs of tubercle were general. Enlargement of corneal glands in eight cases, enlargement of axillary glands in one case, attacks of intestinal obstruction from enlarged mesenteric glands in one case, and history of previous tuberculous pericomtes in one case. Otorrhea was present in two cases, tonsils were enlarged in seven cases, and eleven of the twelve cases had defective teeth. Blepharitis was present in five cases, nasal catarrh in all. Pediculi capitis was noticed in eleven of the twelve cases.

In conclusion, the author calls attention to the possibility of the toxemia present being due to bovine tuberculosis.

W. R. P.

# ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE.

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## Investigations Concerning the Immunizing, Especially the Phagocytic Ocular Processes.

ZADE, M., Jena (*Arch. f. Ophth.*, Vol. LXXV, Part 1), summarizes his results as follows:

1. The lacrimal secretion contains neither bactericidal substances nor opsonins.

2. The aqueous of normal, nonirritated eyes (rabbit, dog, man) contains neither bactericidal substances nor opsonins. After a single withdrawal of aqueous, bactericidal and opsonic elements appear in the new formed aqueous. Opsonins also enter the anterior chamber in the most diverse inflammatory conditions of the eye. The opsonins following irritative conditions quantitatively are much below the opsonic power of the blood serum. Dionin causes a weaker opsonic effect in the aqueous than subconjunctival injections of normal salt solution.

3. The destruction of pneumococci in the peritoneal cavity of the guinea pig and in the vitreous of the rabbit may be caused solely by bacteriolysis without demonstrable phagocytosis.

4. With two positively active immune sera, neither in the body of the animal nor in the reagent glass could a bacteriotropic action be demonstrated.

5. The opsonins resulting from corneal or vitreous infections are not specific. A. C. S.

### The Injuriousness and Usefulness of Our Modern Illuminants.

Hertel and Henker, Jena (*Arch. f. Ophth.*, LXXIII, Part 3). The authors claim that diffuse daylight represents the ideal illumination; the best and safest illuminant, therefore, being one which most closely resembles daylight.

They made a series of photographic spectra of many different illuminants, with and without various kinds of glass shades, and conclude that the actual sources of light should not be directly visible to the eye, that the excessive luminosity of the illuminants should be so diffused—by suitable distribution—that the radiation from any portion of the illuminant reaching the eye should not be more intense than that from diffusely illuminated clouds. All rays under 300 uu should be withheld.

Neither the Hallauer nor Euphos glass meet these requirements. Of all those examined the Schott neutral glass seemed to give the best results. A. C. S.

### Concerning Schnabel's Theory Regarding the Genesis of the Glaucomatous Excavation.

Hippel, V., Halle (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift), summarizes the results obtained from an anatomical examination of 46 cases, as follows:

1. The so-called cavernous atrophy of Schnabel is exceedingly common in glaucomatous eyes; in nonglaucomatous eyes, however, rarely observed.

2. The so-called initial appearances of cavernous atrophy cannot always be positively differentiated from artefacts. Where it is possible to exclude the latter, it is a question whether the condition is always one of dissolution or merely an infiltration of the tissues.

3. In the more advanced stages there doubtless exists a kind

of atrophy which differs from other known varieties in the completeness of the nerve tissue atrophy.

4. Spaces similar to those found in the papilla are frequently, but not constantly, met with in the ganglion cells of the retina. The material up to date is inadequate to decide whether these are of vital nature or artificial products. The occurrence of similar changes in numerous cases of diverse nature is in favor of the latter supposition.

5. The lamina cribrosa in normal eyes has a variable position and is of unequal strength. A lamina with marked posterior convexity may occur in normal eyes. (Elschnig.) It is therefore extremely difficult in many cases to decide whether the posterior displacement of the lamina is abnormal.

6. The lamina cribrosa may remain in the normal position not only during the incipient stages, but even after the complete formation of a glaucomatous excavation.

7. In other cases, however, the development of the excavation without displacement of the lamina begins in the absence of Schnabel's spaces.

8. The relations of the lamina are therefore variable, consequently neither H. Müller's nor Schnabel's explanation of the development of the excavation are applicable to all cases.

9. In attempting to explain the genesis of the glaucomatous excavation, the conceptions formal genesis and causal genesis must each be considered separately. Schnabel's views apply only to the formal genesis; by no means do they justify positive statements concerning the causal genesis.

10. Intraocular increase of tension still remains the most probable cause of the excavation; at any rate, this has not been disproved by Schnabel. It must be conceded, however, that increase of tension may assert itself in another way than in a simple mechanical displacement of the lamina. What this action is, necessitates further study. Perhaps an important anatomical finding is the enormous hyperemia of many optic nerves in glaucoma.

11. Hemorrhages cannot be considered the cause of Schnabel's spaces.

12. A totally excavated papilla may almost be bridged over by a delicate membrane on a level with the retina containing branches of the central vessels.

13. Abnormal transparency of a nonexcavated papilla might very likely simulate the clinical picture of a total excavation.

14. The retinal margin is relatively frequently displaced into the excavation.

15. Glaucomatous increase of tension may lead to marked elongation of the globe, to thinning of the sclera at the posterior pole and to high-grade myopia.

16. Typical Schnabel atrophy may result from the experimental production of secondary glaucoma following injections of scarlet oil (Scharlach-öl) into the anterior chamber of a dog's eye. While as yet only one such case has been observed, it nevertheless suggests an experimental investigation of this question. A. C. S.

### Concerning the Theories of the Genesis of Myopia.

Lohmann, Munich (*Klin. Monatsbl. f. Augenheilk.*, April, 1910), reasons that a disturbance of the growth of the eye which would interfere with the inherent growth tendency might have the effect of producing the myopic form of eye. In the growth of the eye before and shortly after birth differences in the rapidity takes place in different sections of the eye. This is determined by the fact that the optic nerve occupies in the primary optic vesicle a position in the median plane below, which in growth it cannot retain. This has its further expression in the fact that in the newborn the fovea is as far removed from the papilla border as in the adult. He agrees with Best that the growth of the eye is controlled by optical motives, but places the changes, which he assumes to take place as a result of the growth tendency to the sclera, as it is a physiological necessity for the fovea to retain undisturbed its position at the posterior pole of the eye. The growth of the eye takes place principally in the first seven years of life; in the following years, in comparison to the growth of the body, it undergoes an absolute and relative retardation, and exactly at this period, the end of the first and the beginning of the second decade, occurs the progression of myopia. That nearwork, at this period, is a contributing factor there can be no doubt. W. Z.

### The Condition of the Internal Ocular Coats After Certain Methods of Fixation.

Prokopenko, Charkow (*Arch. f. Ophth.*, Vol. LXXV, p. 3). The article is technical and the conclusions too lengthy to permit of abstraction. A. C. S.

### Ring Sarcoma of the Ciliary Body.

Bergmeister, R., Vienna (*Arch. f. Ophth.*, Vol. LXXV, p. 3), reports a case of ring sarcoma of the ciliary body with pathological findings in a patient 61 years of age. There was a sarcomatous infiltration of the entire ciliary ring, and in the upper portion a nodule had broken through the epithelium. There was early involvement of the iris, which he considers characteristic of ciliary ring sarcoma. Clinical points of interest were entire absence of increased tension, no retinal detachment, considerable visual impairment because of incipient cataract and myopic lenticular astigmatism, tendency of progression towards the angle (irido-dialysis) and early changes in the iris (folding and marked pigmentation of the lower ciliary portion of the iris). The iris became affected by direct invasion from the iris root and by infection by the aqueous.

The meshwork of smooth muscle fibers in the ciliary body offers an obstacle to the posterior growth of sarcoma cells. The ring form is probably the result of a dissemination of sarcoma cells by the circulus arteriosus iridis major, a view supported by the microscopical findings in the case reported.

A. C. S.

### Multiple Cysts of the Posterior Iris Surface and of the Ciliary Body. Pseudo Melanosarcoma of the Ciliary Body.

Pagenstecher, A. D., Wiesbaden (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift), reports such a case in a 60-year-old man. Examination revealed a dark brown tumor mass projecting 1 mm. into the pupillary space from the inferior posterior chamber. The iris was pushed forward below, and there was an opacity of the lens in the lower outer quadrant. The eye was quiet and tension normal. Vision, 6/24 with correction.

A diagnosis of sarcoma of the ciliary body or tumor of the posterior iris surface was made and the eye enucleated.

Pathological examination showed multiple cysts on the posterior surface of the iris and ciliary body. The iris cysts resulted from a separation of the two pigmented layers, the ciliary cysts from a detachment of the unpigmented epithelium, or they developed in the proliferating epithelium, the walls for the most part being unpigmented.

He believes the benign tumor would ultimately have given rise to positive signs of secondary glaucoma, necessitating enucleation. A. C. S.

### Osteomata of the Nasal Accessory Sinuses With Rare Ocular Complications.

MARX, H., Heidelberg (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift). The symptoms produced by osseous tumors of the accessory sinuses are usually ocular, due to encroachment of the orbital space. Inflammatory symptoms are rarely observed.

Marx reports three cases of osteoma of the sinuses successfully operated upon in the Heidelberg clinic. In the first case the tumor originated in the anterior ethmoidal cells, secondarily invading the frontal sinuses; in the second, an osteoma of the frontal sinus was associated with emphysema of the conjunctiva; in the third, the tumor was of sphenoidal origin, the condition clinically simulating orbital cellulitis. He could find only one similar case in the literature, an osteoma of the ethmoid reported by Oppenheim. A. C. S.

### A Case of Rhabdomyoma of the Orbicularis.

SCHNAUDIGEL, O., Frankfurt (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift), cites the history of a case with pathological findings, probably the first authentic case of rhabdomyoma in ophthalmic literature. He considers the tumor as belonging to the benign forms of rhabdomyomata. The article is concluded with a discussion on the classification, pathology and etiology of rhabdomyomata. A. C. S.

### On Bilateral Symmetrical Fat Tumors of the Conjunctiva and Eyelids.

VOSSIUS, A., Giessen (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift), reviews the literature and reports a case of bilateral symmetrical subconjunctival lipoma, followed later by the appearance of symmetrical fat herniæ in both upper and lower eyelids. Both conditions he considered the result of herniæ of the orbital fat.

He draws the following conclusions:

1. True subconjunctival fat tumors may occur unilaterally or bilaterally at symmetrical points in the upper conjunctival sac. These are much rarer than the congenital lip dermoids,

and like the latter are usually situated above, between the superior and external recti muscles.

Fat herniæ may also occur under the conjunctiva.

2. Bilateral symmetrical fat tumors may also involve the lids.

3. Symmetrical lipomata of the conjunctiva and lids are much more rarely observed than symmetrical lipomata in other parts of the body. They should not be considered the result of a trophoneurosis (Grosch), nor is Wendel's theory applicable.

4. Fat herniæ of the lids may occur.

5. Elderly, very stout individuals are especially predisposed.

A. C. S.

### A Contribution to the Pathological Anatomy of Chorioidal Sarcoma.

Botteri, Innsbruck (*Klin. Monatsbl. f. Augenheilk.*, May-June, 1910). The anatomic findings in a case of chondrosarcoma of the chorioid seen by Botteri in a 33-year-old woman were: A marked stretching and thinning of the entire temporal half of the sclera. The chorioid in this region was involved in a saucer-shaped grayish-white tumor. The tumor mass thinned off anteriorly and ended near the ciliary muscle; posteriorly it terminated in a sharp angle about 3 mm. from the papilla. There was complete detachment of the retina. On the tumor side the thinned iris showed a peripheral anterior synechia. The cornea appeared normal. Microscopically the tumor was made up largely of small spindle cells with elongated nuclei. The intracellular substance was scant and had a homogeneous cement substance between the elements. The slight pigmentation was made up of a coarse reticulum or of a thin trabecula accompanied by connective tissue or vessels, and more pronounced in the region of the sclera Perls' reaction was positive. The growth was very vascular, the vessels consisting principally of veins. One of these vessels was surrounded by a homogeneous tissue, which stained a deep uniform red with eosin, and contained scattered large oval cells, staining faintly, containing one or two nuclei, and similar osseous-like tissue was scattered throughout the tumor

The author states that such a diffuse sarcoma with marked bulging of the sclera, without perforation and with cartilaginous changes, is of extremely rare occurrence. W. Z.

### A Case of Alternating Superficial Necrosis of the Lids of Both Eyes, Probably of Hysterical Origin.

Heuss, V., Muench (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift). This affection was observed in a 21-year-old woman. Each attack was characterized by swelling and brownish discoloration of the lids (usually both upper and lower) of one eye, followed by the formation of a band-like eschar on the surface of the lids, only a narrow strip of skin adjoining the lid margins escaping. The lids were stiff, and there was ptosis. Tenderness was present in the entire lid region. In the course of several weeks the eschar gradually separated as delicate membranous shreds, revealing underneath the rose-colored epidermis. As the inflammatory symptoms subsided, the opposite lids became similarly affected.

During a period of observation lasting seven months nine attacks occurred, the lids of both eyes being affected alternately. The zygomatic region was invaded once.

Excepting a concentric contraction of the visual field for white, blue and red, no other ocular complications were observed. Hysterical sensory disturbances were also present.

The author considers the disease process an expression of a probable trophoneurotic disturbance in the region supplied by the first and second branches of the trigeminus, dependent upon a general hysterical condition. A. C. S.

### Syphilitic Gumma of the Tearglands.

Mendez, Montevideo (*Klin. Monatsbl. f. Augenheilk.*, May and June, 1910). The patient, a man 51 years of age, had a tumor of the lacrimal gland the size of a hazelnut. Microscopically it was made up of typical granulation tissue with necrotic areas. This granulation tissue consisted of many varieties of cells, resembling inflammatory granulation tissue, especially rich in lymphocytes and fibroblasts. Epithelial cells were numerous and giant cells scarce. The necrotic areas were typically gummatous. The gland itself was entirely replaced by a necrotic area. Neither tubercle bacilli nor spirochetti were found. W. Z.

### On the Therapy of Blenorrhea by Means of Blenno-lenizet Ointment.

Bayer, H., Strassburg (*Muench. med. Woch.*, May 10, 1910), treated twelve cases of gonococcic conjunctivitis with blenno-lenizet ointment—two infants 8 days old, one 68-year-old woman, and nine children ranging from 3 to 11 years of age. The results were decidedly unfavorable, the majority of the cases developing ulcers, several of which perforated. The woman was admitted to the hospital with one eye already lost, the other cornea, however, being clear. This eye was nevertheless subjected to the ointment therapy, prolapse of the lens and vitreous resulting. In a four-year-old child admitted with clear cornea, perforating ulcers occurred in each eye, practically destroying vision.

The writer strongly cautions against the employment of blenno-lenizet ointment. A. C. S.

### A New Rapid Contrast Stain for Trachoma Bodies in Section.

HERZOG, H., Berlin (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift), employs a modified Pick-Jacobson solution, the stain consisting of

1. 15 cc. of a ¼ per cent aqueous solution of carbolic acid.
2. 20 drops of a saturated (absolute) alcoholic methylene blue solution.
3. 10 drops of a 1 per cent watery alcoholic (10%) fuchsin solution.

The specimens are passed through absolute alcohol, anilin oil-xylol and embedded in paraffin.

Sections should be of 5 u. thickness.

The mounted sections are then stained with the above mixture 6 to 8 seconds, the excess removed and the sections quickly passed through alcohol to xylol. A. C. S.

### Acute Conjunctivitis Caused by Streptobacilli or Short Vaginal Bacilli.

ADDARIO, C., Palermo (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift). A clinical bacteriologic study of one case and experimental investigations in connection with the same lead him to the following conclusions:

Aside from the well-known varieties of acute conjunctivitis there occurs another form of mild catarrhal conjunctivitis dependent upon infection with normal vaginal secretion—upon a streptobacillus or so-called short bacillus invariably present. This conjunctivitis runs a subacute course and is characterized by edema of the lids, moderately profuse mucopurulent secretion, redness and uniform thickening of the tarsal conjunctiva and slight edema of the bulbar conjunctiva. Left to itself the affection endures several weeks without spontaneous tendency towards restitution, exhibiting characteristic signs of acute inflammation, photophobia, moderately profuse secretion, burning and lancinating pains radiating from the eye to the corresponding supraciliary region. The affected conjunctiva returns to the normal state in eight days if treated once daily with ½ per cent silver nitrate solution.

This conjunctivitis was produced experimentally in one individual by inoculation of normal vaginal secretion containing the streptobacillus. The inoculation of human eyes with a bouillon culture of vaginal streptobacilli caused a very mild catarrhal conjunctivitis, a subject to be discussed in a special contribution. A. C. S.

### On Mydriasis and Congenital Ocular Defects in Keratoconus.

Pagenstecher, H. E., Heidelberg (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift, for Leber), arrives at the following conclusions:

1. In five of eleven observed cases of keratoconus a more or less marked mydriasis presented itself in the eye with keratoconus or in the more affected eye in bilateral cases. The pupillary difference averaged 1 mm. in pupils 4 to 5 mm. in diameter.

2. This mydriasis is only apparent, being due to optical conditions; the corneal radius in the more affected eye being shorter and the anterior chamber deeper than in the fellow-eye.

It is doubtful whether in some cases there is associated an unknown nervous factor or whether the anisocoria is to be considered of congenital origin.

3. Apparent mydriasis is conceivable in other cases in which a marked difference in depth of the anterior chamber exists. This phenomenon is of neurologic interest, since failure to recognize the anisocoria as unreal may lead to false conclusions.

4. In 11 carefully studied cases of keratoconus congenital ocular abnormalities were found; lenticular opacities in 9, remains of the pupillary membrane in 4 cases. These observations lend support to the theory attributing keratoconus to

congenital factors, perhaps to a congenital hypoplasia of the central portions of the cornea.

5. The usual variety of cataract met with in keratoconus resembles cataract punctata. Generally only several punctate opacities are found in the lens periphery and near the posterior pole. A variety simulating zonular cataract is more rarely observed. These varieties of congenital cataract were found in 90 per cent of true cases of keratoconus.

6. Keratoconus and hydrophthalmus may occur in the same family. It is questionable, however, whether a relation exists between the two diseases, although both are related to congenital developmental disturbances. A. C. S.

### A Contribution to Ringform Opacity of the Anterior Lens Capsule.

Heschler, Stuttgart (*Klin. Monatsbl. f. Augenheilk.*, April, 1910), observed a ringform opacity on the anterior capsule in an eye which had received a simple contusion. It was first apparent on the third day, and was still present ten days later, but had disappeared when again examined one month later. It was a complete circle. The breadth of the ring varied from 0.5 to 1 mm. and corresponded to the location of the normal pupil. There were also transient localized lenticular opacities. W. Z.

### On the Therapy of Injuries of the Lens Caused by Steel Particles.

Elschnig, Prague (*Muench. med. Woch.*, April 12, 1910). Since the retention of steel in the lens, even after closure of the capsule wound, is generally followed in time by a general opacity, owing to a probable chemical action of the dissolved iron, Elschnig in a case which came under his observation resorted to the operative removal of the fragment through an incision made in the lens capsule, a procedure never tried before.

In this case there had occurred a perforating injury of the cornea and lens two months previously, the steel particle having become lodged in the posterior cortex. There was a delicate, grayish opacity extending from the anterior capsule wound to the site of the foreign body. Otherwise the lens was perfectly clear.

After maximal dilatation of the pupil he introduced a Graefe knife near the pupillary margin perpendicularly to the cornea and radially through the anterior lens capsule and superficial cortical layers. With the giant magnet the foreign body was then drawn through the operative wound in the capsule and allowed to fall to the bottom of the anterior chamber. A maximal contraction of the pupil was then produced by frequent instillations of eserine in order to aid in the closure of the capsule wound. The following day the foreign body was extracted with a hand magnet through a lancet invasion. No postoperative complications followed.

Dilatation of the pupil six days later revealed the peripheral capsule wound as a grayish linear opacity studded with brownish pigment deposits. No fresh opacities were noted in the lens substances.

Seven months later the opacities at the original wound entrance and within the lens were slightly more pronounced, but vision was almost normal.

He therefore concludes that steel fragments should be removed, even from clear lenses, with the magnet, and in cases in which the wound edges have united over the fragment an incision of the capsule is indicated.

He also concludes that steel cataracts are not as dense as commonly supposed, that even those of longer than six months' duration may exhibit a marked softening of the whole lens or even partial liquefaction of the cortex.

Extraction through a lancet wound is consequently indicated in patients under forty years of age. A. C. S.

### On the Question of the Pathological-Anatomical Diagnosis of Sympathetic Ophthalmia.

WEIGELIN, S., Stuttgart (*Arch. f. Ophth.*, Vol. LXXV, Part 3), summarizes the results obtained from an anatomic examination of 41 eyes as follows:

1. In all cases of true sympathetic ophthalmia, the characteristic sympathetic inflammation described by Fuchs was found in the exciting eye.

2. In all cases of ordinary traumatic iridocystitis, with and without sympathetic irritation, in which the second eye was positively not affected, an aberrant anatomic picture presented itself, which only occasionally in some particulars showed a

remote resemblance to the picture of sympathetic ophthalmia.

3. In the cases of questionable sympathetic ophthalmia, the anatomic examination was able to give the deciding opinion. In only one case was a positive opinion impossible because of high grade signs of degeneration.

4. The examination of two sympathizing eyes revealed the same anatomic conditions as in the exciting eye. One of these eyes presented clinically a uveitis serosa sympathica.

5. In one case of spontaneous chronic iridocystitis of both eyes a typical sympathetic inflammation was demonstrable in the first affected eye. A. C. S.

### Concerning Sympathetic Ophthalmia.

Elschnig, Prag (*Arch. f. Ophth.*, Vol. LXXV, P. 3). The results of Elschnig's experiments showed that the action on the blood serum of antigens introduced into the eye was considerably less marked than after subcutaneous introduction, consequently many times less effective than after intraperitoneal or intravenous injections of the active substance. They furthermore showed that the antigen effect is much more striking when the injected animal is already immunized to the substance introduced, and finally that severe inflammation of the globe, though enfeebling the antigen action of the injected substance, does not abolish the same, excepting probably after injections into the vitreous in cases of seclusion pupillæ. A. C. S.

### The Microscopical Findings in a Case of Sympathetic Ophthalmia in Which Both Eyeballs Were Examined During the Incipient Stages of the Disease.

Wagenmann, A., Jena (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift), reports a case of sympathetic ophthalmia of particular interest, because it was possible to obtain the sympathizing eye for microscopical study about four weeks after the first subjective symptoms of sympathetic irritation, about nine weeks after the injury to the fellow eye, enucleation of the latter being performed two days after the onset of sympathetic symptoms.

This case represents the second earliest stage of the disease in the sympathizing eye, so far examined histologically, the earliest one being Collins' case (14 days).

The results of the microscopical examination of the two eyes in general agreed with the findings of Fuchs, Ruge and Schirmer.

Even at this early stage, the whole uveal tract of the sympathizing eye was affected. The chorioid was diffusely infiltrated with mononuclear lymphocytes, but epithelioid and giant cells were absent in this eye, probably because the disease was still in its incipiency. A. C. S.

### On the Relation of Mikulicz's Disease to Tuberculosis and on the Mode of Infection in Tuberculous Disease of the Lacrimal Gland.

Igersheimer and Pöllot, Heidelberg (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift). The authors cite the history of a case of symmetrical enlargement of the lacrimal and submaxillary glands in a 40-year-old, otherwise healthy woman. Operative removal of the lacrimal tumors resulted in a cure (at least no recurrence of the lacrimal condition was demonstrable three years later). The histological findings suggested a tuberculous process, but no bacilli were found, and the clinical and experimental tests for tuberculosis were negative.

To ascertain what relation tuberculosis bears to Mikulicz's disease, they made an analytical study of 44 cases reported in the literature, arriving at the conclusion that in most of the numerous cases of Mikulicz's disease in which the history and especially the histological findings were suggestive of tuberculosis, tuberculosis probably played no part. In rare cases, however, the bacillus may be responsible for typical instances of Mikulicz's disease.

Chemical or metabolic factors may perhaps play a part in the causation and in future cases these points should be investigated.

B. On the mode of infection in tuberculosis of the lacrimal gland.

The writers report a case of probable tuberculosis of the lacrimal gland and conjunctiva in a 16-year-old girl in which the tuberculosis of the gland was considered of endogenous origin, and the conjunctival tuberculosis secondary to the gland infection for the following reasons:

1. The symptoms of a tubercular focus in the body (cough, expectoration and night sweats), multiple lymphomata and

slight elevation of evening temperature suggested a hematogenous origin of the lacrimal disease.

2. The distribution of miliary tubercles over the conjunctiva was more typical of a secondary infection.

3. The complete disappearance of the conjunctival tubercles after extirpation of the diseased accessory gland.

4. The discontinuity of the process microscopically favored the view of a transference to the conjunctiva by the lacrimal or possibly the blood stream.

5. The proximity of the lesion in one place to the thinned wall of the gland duct favored the probability of bacilli gaining access to the lumen of the ducts.

Moreover, a study of the cases in the literature and the results of experimental investigations conducted by the authors (especially the limitation of tuberculous lesion to the conjunctiva in one case) all seem to favor the view that in simultaneous tuberculosis of the lacrimal gland and conjunctiva, the gland is first infected endogenously, the conjunctival disease resulting secondarily. A. C. S.

### Bilateral Idiopathic Pulsating Exophthalmos With Spontaneous Recession.

Weinkauff, K., Kaiserslautern (*Arch. f. Ophth.*, Vol. LXXIV, Festschritt), reports such a case in an 84-year-old woman. After an attack of violent headache, stupor and vomiting, there occurred edema of the face, lids and conjunctiva. The eyeballs were proptosed and immobile, the pupils dilated and rigid, the disks swollen and the retinal veins moderately dilated. There were numerous retinal hemorrhages and the vision in each eye reduced to fingers in 1½ meter.

Two months later edema and exophthalmos gradually began to recede, but in the upper nasal orbital aperture of each eye a faint pulsation could be felt, auscultation revealing a systolic, drumming sound and a diastolic blowing sound. Subsequently a pulsating pea-sized nodule appeared in the upper nasal angle of the right orbit, which pulsation could barely be felt at the end of another month. A pulsating vessel then appeared in the upper nasal angle of the left orbit, spreading over the upper orbital margin. Compression of either carotid was without effect on the pulsation.

Pulsation of the globes was never felt, nor was there visible pulsation of the retinal vessels. Several months later both exophthalmos and pulsation had disappeared, and soon after the patient died. No autopsy was permitted.

The writer thinks the condition most probably resulted from an almost simultaneous perforation of the sclerotic lesions of both internal carotids in the cavernous sinus. A. C. S.

### Tuberculin Immunity and Tuberculin Therapy in Tuberculous Ocular Affections.

Leber, A., Berlin (*Arch. f. Ophth.*, Vol LXXIV, Festschrift), arrives at the following conclusions (in abstract):

1. The possibility of therapeutically influencing tuberculous ocular disease by tuberculin is proven by the occurrence of locally formed antibodies and the so-called local reaction following tuberculin injections.

2. The value of tuberculin as a specific curative agent exceeds all other non-specific therapeutic measures.

3. Every tuberculin produces in the disease focus as well as in the organism biological reaction processes which are the more active, the more completely the bacterial constituents are represented in the preparation.

4. The objective signs of a tuberculin immunization consists in stale reaction, local reaction and general reaction. The experimentally demonstrable changes include the negative local hypersensitive reaction, increase of the opsonic index and a possible occurrence or increase of antituberculin in the blood serum.

5. While from a therapeutic standpoint tuberculin T. R. and B. E. in general possess no advantages over old tuberculin, the latter is preferable, especially in practice and in dispensary treatment because of the simpler method of application.

6. Local reactions, the expression of the specific influence are inevitable and therefore necessary for the therapeutic effect. A conscientious treatment aims at a minimal local reaction and the avoidance of a general reaction.

7. A carefully carried out tuberculin treatment will result in: (a) Decided abbreviation of the disease process; (b) amelioration of the local subjective symptoms; (c) improvement of the general condition.

8. Since the various experimental immunity reactions of

significance in diagnosis fail in the estimation of therapeutic results, the clinical course and local condition can only be considered trustworthy criterions.

9. The difficulty met with in certain cases to decide between a spontaneous and a tuberculin cure intimates that favorable results from the employment of old and new tuberculin do not follow quite so frequently as v. Hippel's observations would have one believe. To decide whether such a tuberculin treatment is of permanent value necessitates the study of a large number of control cases for a period of years.
A. C. S.

### Contribution to the Tuberculin Treatment of Tuberculous Ocular Affections.

Busse, A., Bremerhaven (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift), tried the tuberculin treatment in 36 cases with favorable results—3 cases of corneal ulcer, 7 cases of interstitial keratitis, 6 cases of sclerititis, 13 cases or iritis and iridocyclitis, and 7 cases of chorioretinitis.

He thinks the best results are obtained if in the test injections old tuberculin is employed according to Koch's directions, and in the treatment bacillus emulsion according to Hippel's method. He also believes in a gradual increase of the dosage, and in small initial doses in young individuals. He is strongly in favor of longer intervals between injections (5-14 days, varying with the strength of the dose).

A. C. S.

### On Iridencleisis Antiglaucomatosa Holth.

Bentzen, Copenhagen (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift), reports the history of 22 cases operated on by Holth's method and by a modification of this method devised by the author.

Bentzen found it difficult to procure a sufficiently large iris prolapse without including the sphincter in the iris incision. He therefore abandoned the operation and performed iridectomy with encleisis of one of the angles of the coloboma, a procedure he performed 11 times. In the twenty-second case, however, he modified the operation, doing a preliminary iridectomy through a corneal lancet incision followed by a subconjunctival encleisis after the eye became quiet. (He has recently performed this operation four times and considers it the safest method for procuring a subconjunctival encleisis.)

In judging the curative effect of subconjunctival incarceration the writer feels it necessary to make allowance for the unfavorable condition of the cases operated upon, 13 of the 19 cases of chronic glaucoma being markedly degenerated; eight patients were 70 years of age or over.

In a case of buphthalmus the operation proved very effectual. Normal tension and a general favorable result occurred in 13 cases (59 per cent).

While the writer believes that perhaps the operative method is open to improvement, clinical experiences indicate that chronic glaucoma should be operated on as early as possible, that the incarceration of iris tissue into the scleral wound is free from danger and in many cases of therapeutic value.

A. C. S.

### The Retardation of Ocular Growth After Iridectomy in Early Infancy.

Schomberg, L., Munich (*Muench. med. Woch.*, May 10, 1910), studied two seven-year-old twins who had been iridectomized in one eye at the age of eight months. The difference in size between the operated and unoperated fellow eye as measured with the ophthalmometer was not enough to warrant positive conclusions to be drawn, and in one case was undoubtedly due to the astigmatism of leucoma corneæ Since full occular development had not been reached, the writer feels disinclined to refute Wessely's findings, but he believes the cases nevertheless tend, to show that the application of these experimental results to the human eye should be made with some reservation. A. C. S.

### The Cure of Squint in the Adult by Amblyoscope Exercises.

Cauer, R., Stettin (*Arch. f. Ophth.*, Vol. LXXIV, Festschrift). In the author's case (a 16-year-old girl) convergent strabismus was not noticed until the tenth year. Six years later diplopia set in. The patient fixed with the left eye. Vision O. D. = 5/15, O. S. = 5/10. Vision could not be improved with correcting lenses and the glasses were discarded after one week's trial. By means of exercises with Worth's amblyoscope during a period of over two years, the squint finally disappeared and single vision was secured.

A. C. S.

### An Unusual Case of Paralysis of Accommodation Following Diphtheria.

Wiegmann, Hildesheim (*Klin. Monatsbl. f. Augenheilk.*, April, 1910). A boy 12 years of age was brought to the clinic because for some time he had to close the right eye and hold the head slanting at near-work. Three years previously he had had diphtheria and there followed a transient weakness of accommodation in the left eye, but that of the right still persisted and was associated with mydriasis. Whether there had been left-sided mydriasis could not be determined. One year later there remained the mydriasis as the only abnormality. The author considers the possibility of this being an associated anisocoria. As to the unusual duration of the palsy, he questions whether it was due to diphtheritic intoxication or an accidental concomitant complication of some other affection, and rather favors the assumption of a nuclear hemorrhage. W. Z.

### Retinal Hemorrhages Following Influenza.

Weigmann, Hildesheim (*Klin. Monatsbl. f. Augenheilk.*, April, 1910). The patient was a man 28 years of age, apparently in the best of health. One year previous to the gradual failure of vision in the left eye he had had a long-continued cold with fever, from the effects of which he had not entirely recovered at the end of several months. The ophthalmoscope showed round and flame-shaped hemorrhages scattered throughout the retina extending to but not involving the macula. The papilla was red and the veins distended. V. = 5/5 pt. Under K. I. and Sajodin there was a slow but complete absorption of the hemorrhages. The author's explanation of the case is that the patient had suffered from chronic influenza and that as a result of the long continued action of the toxines the retinal blood vessels were affected.
W. Z.

### Congenital Atresia of the Canaliculus and Its Operative Treatment.

Kraupa, Prag (*Klin. Monatsbl. f. Augenheilk.*, April, 1910), describes a case in which there was on the right side absence of the punctum and on the left side absence of both canaliculi. Elsnig performed the following operation: The tear sac was opened by an incision carried along the lower inner orbital margin and the anterior crest of the lacrimal bone and a sound carried into the nose. A flap 1 cm. wide was now dissected from the bulbar conjunctiva just in front of the semilunar fold with its pedicle above the fold. An incision was now carried downwards between the semilunar fold and the caruncle to the sound lying within the sac. The narrow conjunctival flap was now sutured into this incision and attached to the posterior lip of the lateral wall of the sac by a suture passed through its apex. The needle was brought out in the skin-tear-sac wound and the latter then closed with sutures. K. considers the operation—a conjunctival covered anastomis between the conjunctival and the tear sacs—(syndesmo-dacryocystotomie) to be worthy of trial not only in congenital but in acquired obliteration of the canaliculi. W. Z.

### An Experience With Scopalamin-Morphin Narcosis.

KUMMELL, Erlangen (*Klin. Monatsbl. f. Augenheilk.*, April, 1910), gives the results in which this method of narcosis was combined with local anesthesia. He remarks, however, that he never uses general anesthesia alone, but always proceeds it with scopalamin and morphin. After a thorough physical examination, and two hours before the intended operation, the injections are given. Men receive 0.6 mg. to 0.8 mg., according to their physique. Women 0.5 mg. In both sexes combined with 0.09 mg. of morphin. Most experience thereafter a lassitude and some fall asleep. After one hour, if there has not been sufficient action 0.3 to 0.6 mg. is again given. Two hours from the first injection, or a little longer, is the time for operating. In most of the cases local anesthesia with novocaine and adrenalin was used in conjunction. In 46% of the cases good results were secured, good anesthesia, with good pulse and good breathing. In the remaining 24% the results were such that no severe pain was experienced.

W. Z.

### Localization of a Splinter of Brass Within the Eye by Aid of the Sideroscope.

ASMUS, Dusseldorf (*Klin. Monatsbl. f. Augenheilk.*, April 1910), records this case because it illustrates the extreme sensitiveness of the old Hirschberg sideroscope. There was a deflection of the needle at a distance of 15 mm. from the limbus, but no further. A diagnosis of a splinter of brass soiled by iron was made. The eye had to be enucleated and a large piece of brass was found in the lower nasal portion of the globe. W. Z.

### The Technic of Bacterial Investigation Before Cataract Operations.

Gradle, Prag (*Klin. Monatsbl. f. Augenheilk.*, April, 1910). As it has been demonstrated that the iritis following cataract is due to infection resulting from the presence of streptococci in the conjunctival sac before the operation, Gradle has examined fifty eyes, both by smears and by culture, for the presence of this organism at this time. If any discharge was present this was used. The smears were made in the usual manner and stained with both methyl blue and Gram. Serum boullion was used for cultures (1 pt. sterile horse serum and 2 parts boullion, in all 1 cm.); after twenty-four hours smear preparations were made and stained as above. The native smear investigations were difficult because of the rarity of any secretion present. In culture streptococci were found in 29 cases. In only 18 of these were streptococci found in smears. In the remaining 21 cases streptococci were found in 2 cases in smears, where they were absent in culture. The investigation shows that in 13 cases (45%) of the 29 where streptococci were actually present in the conjunctival sac the smear preparation failed to show their presence. W. Z.

### Plastic Surgery of the Lid Margin.

Blaskovics, Budapest (*Klin. Monatsbl. f. Augenheilk.*, March, 1910), makes a distinction between trichiasis due to inflammation of the lid margin and that due to trachoma. In the first there is no distortion of the tarsus, while in the second there is, and in this condition he would not use the term trichiasis, but that of "entropium cicatriceum incipiens." In those cases where extirpation of the tarsus is not demanded, or where after this operation has been performed there remains some displaced cilia, the author has devised the following operation: A lid plate is slipped under the lid and an intermarginal incision is made long enough to include all of the displaced cilia. In total trichiasis it should reach from the canaliculus to the outer canthus. Two skin incisions are now made which reach through to the tarsus. The first is made parallel to and 3/4 mm. from the lid margin and extends at each end about 1/2 mm. beyond the ends of the intermarginal incision. The second incision is made with the skin drawn up to the orbital margin and is slanted so that the base of the narrow strip of skin shall be its broadest part. Fig. 1.

Fig 1.

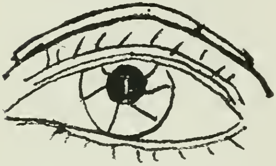
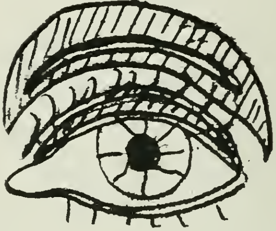


Fig. 2



This second incision is only 1/2, or at the utmost 1 mm. above the first incision and meets it 1/2 mm. within its ends. The resulting strip is thus just as long as the intermarginal incision. If the skin of the lid is drawn up to the brow the deliniated strip will appear as a narrow island resting upon the surface of the tarsus. The marginal bridge of skin is now separated from the underlying structure by passing a narrow knife into the intermarginal incision and bringing it out in the first lid-skin incision. The bridge is then separated by a sawing motion from end to end. Fig. 2. The island of skin is now dragged down into the intermarginal space underneath the bridge flap. This is best accomplished by drawing up the bridge flap with one pair of forceps while with a second pair the island of skin is drawn downwards. Fig. 3. The island

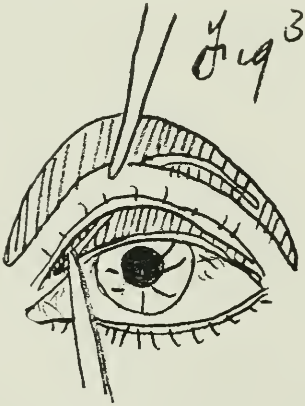
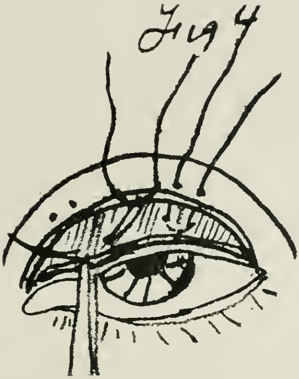
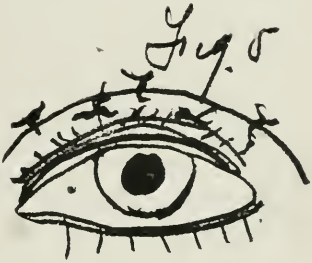


Fig 3

of skin is now sutured into position. If it is a complete case three mattress sutures are used for this purpose. These are passed just above the upper margin of the island, the bite being parallel to it and including the soft tissues down to





the tarsus. The two ends of the double armed suture are then brought out in the displaced bridge of skin above the cilia, separated by a distance of 2 mm. Fig. 4. After all these sutures have been placed and tied the margins of the orbital lying incision are brought together. Fig. 5. W. Z.

# ABSTRACTS FROM FRENCH OPHTHALMIC LITERATURE.

BY

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### Malingering Test-Type with Red Letters.

Gaupillat, Chalon-sur-Saone (Simulation.—Echelle rouge à caracteres renverses, *La Clinique Ophtalmologique,* Vol. XVI, June, 1910, p. 269), proposes in cases of determined malingerers that lid holders be used in both eyes to prevent the person examined excluding the so-called bad eye from seeing. An intelligent malingerer will do this so quickly that he can easily deceive the examiner. Another aid to the detection of malingerers is to seat the person close to a mirror, when the closeness of the mirror will lead him to suppose that the types which he sees in the mirror are closer than they really are, and to read much more than he would otherwise. Gaupillat had trouble in obtaining reversed test-type, which are easily procurable in this country. He had some of these made in pink, so that they disappeared when a red glass was placed in front of an eye with normal vision for black letters. Having proved to the patient whose so-called good eye has been covered with the red glass that he has no trouble in reading black letters, Gaupillat suddenly turns the patient and makes him look at the pink letters reflected in the mirror. The patient, thrown off his guard, reads the pink letters with the so-called bad eye, thus proving himself a malingerer.

M. W. F.

### Infected Ulcer in a Subject of Hereditary Syphilis.

Le Couedic, Guingamp (Un ulcère infectieux chez une syphilitique héréditaire, *La Clinique Ophtalmologique,* Vol. XVI, June, 1910, p. 264), saw a girl of 11 with a well-developed infected ulcer of the left cornea, which had been coming on for two weeks. No trauma noted. After five injections of 10 cc. of Roux's serum the ulcer began to clear up, the hypopyon disappeared, and the vision rose to 1/10. In spite of repeated injections, however, the ulcer became atonic, and photophobia and injection persisted, although in a milder degree than at first. This decided the author to make a searching examination of the patient, leading to the discovery of nodular tibiæ and Hutchinson teeth. The mother then stated that this only living child had been born after three miscarriages. All local treatment was stopped, and the child put on mercurial frictions. In three days the ulcer began to heal, the iris dilated well under atropin and the sight rose to 1/3. Are we dealing with an infection of a circumscribed corneal lesion due to hereditary syphilis? At any rate, the paraspecific serum has again proved itself of value in its own province, and then the specific medication had to be adduced for the final result. M. W. F.

### The Treatment of Trachoma.

Jocqs, R., Paris (Le traitement du trachome, *La Clinique Ophtalmologique,* Vol. XVI, March, 1910, p. 116), prefers protargol to silver nitrate in the early stages. As a preparatory step to other surgical measures scarification is advisable when the granules cover the whole conjunctiva, but when islands of granules remain, scraping and galvanocautery are preferable. Brushing is considered the best treatment for confluent granulations, to be followed by massage, three or four times a week. Keining uses a tampon of cotton, from which a 1/2,000 solution of corrosive sublimate has been well expressed; Jocqs prefers the finger, which has been dipped into a mixture of calomel and sugar. Cocain anesthesia is sufficient. Protargol in 5% solution is used in the intervals. This method gives excellent results, no deep scars of the mucosa resulting. It would be better to confine oneself to massage alone, but that would prolong the treatment.

Sulphate of copper is the last resort, and even here Jocqs does not approve of the crystal of copper, but uses Ginestous' stick, made of:

| | |
|---|---|
| Copper sulphate | 1.00 |
| Orthoform | 0.50 |
| Chlorhydrate of holocain | 0.40 |
| Gum tragacanth | 0.10 |
| Water | q. s. |

Make a stick 5 centimeters long.

With this stick the pain is markedly less, and the stick may be used freely, even as a scraper for exuberant granulations. Excisions of the culs-de-sac should be avoided, as they often lead to symblepharon of the upper and entropion of the lower lid.

M. W. F.

### Glaucoma Cured by a Simple Section of the Iris.

Abadie, Ch., Paris (Glaucome guéri par une simple section de l'iris, *La Clinique Ophtalmologique,* Vol. XVI, June, 1910, p. 261), has always thought and maintained that the curative property of an iridectomy in glaucoma lay in the fact that in doing an iridectomy one cuts through the circular plexus of nerves which surround the iris. The excision of a piece of the iris would therefore be unnecessary. This sectioning of the iris is, however, difficult and dangerous in ordinary cases of glaucoma, on account of the danger of wounding the lens. One might think of drawing the iris out and cutting through it with the iris scissors, and then replacing the iris. The objection to this is that such a procedure would be dangerous not alone to the eye operated on, but also to the sound eye, which frequently responds to this step with a glaucomatous attack.

The occasion to try the sectioning of the iris where the danger of wounding the lens was not present occurred in a boy of 12, the subject of a traumatic cataract in the right eye. Most of the lens matter had already been absorbed, but a thick capsular remnant still occupied the center of the pupillary area, reducing the vision very much. From this capsular remnant a grayish filament extended to the center of the cornea. Through an incision in the upper part of the cornea a part of the capsular remnant was removed with forceps, but the filament resisted even a strong pull with the forceps, and was cut through, close to the corneal insertion, with a pair of de Wecker's scissors. In connection with this the remainder of the capsule was extracted, and the pupil at once became black.

At the end of four to five days the eye was the seat of a glaucomatous attack. No iridectomy had been done at the time of operation, and the iris had been caught in the corneal wound. Abadie does not think, however, that this was the cause of the attack, but blames the violent traction made on the iris at the time. Tension rapidly increased to +2, and frequent instillations of pilocarpin were ineffectual in reducing the tension. Abadie then decided to try sectioning of the iris. Through a corneal incision, a little up and in from the first incision, the de Wecker scissors were introduced, and the iris cut through, with one cut in the diameter lying opposite to the incision. The lips of the iris wound spread widely apart, forming a large V. All the glaucomatous symptoms disappeared, and the patient counted fingers at one meter without correcting lenses. M. W. F.

### Temporary Operation for Ptosis.

Dor, L., Lyons (Traitement chirurgical provisoire du ptosis paralytique médicalement curable, *La Clinique Ophtalmologique,* Vol. XVI, March, 1910, p. 111). In ptosis proceeding from cerebral hemorrhages or thrombosis the patient is generally advised to forego surgical intervention for two or three months, during which time the ptosis sometimes relieves itself. To avoid the annoyance of the ptosis during this waiting, Dor proposes a simple operation, the effect of which can be nullified by one cut of the scissors, whenever it may become desirable. An incision is made parallel to the border of the upper lid and one centimeter above it; another similar incision is made one-half a centimeter below the brow; both of these cuts go through the skin only. The skin is then undermined, a roll of cotton soaked in vaselin placed over it, and the threads which have been passed underneath the skin are drawn tight, approximating the lower border of the upper incision and the upper border of the lower incision. The upper border of the upper incision and the lower border of the lower incision are then sewed together with a buried reindeer tendon, thus forming a bridge of skin which raises the lid so that the pupil becomes visible, especially with some assistance on the part of the frontal muscle. The orbicularis muscle has not been touched during this little operation, and one cut of the scissors undoes the whole thing. The effect of the operation is not very lasting, however. Soon the bridge of skin begins to stretch, and the ptosis reappears. Dor thinks the effect would be more lasting if the incisions were made deeper or farther apart. M. W. F.

### Contusion of the Globe. Mydriasis. Tear of the Chorioid.

DUBOYS DE LAVIGERIE (Contusion du globe. Mydriase. Dechirure de la choroide, *La Clinique Ophtalmologique*, Vol. XVI, February, 1910, p. 650) presented a boy who was struck in the eye with a piece of mud; the next morning, widely dilated pupil, vision reduced to fingers at two meters. In the fundus slight suffusion. A few days later a whitish line of edema showed itself up and in from the disk. The field of vision was slightly constricted. The vision began to improve at once, and before long was again normal, and the accommodation was also normal. The fundus had also become normal, with the exception of some small dots of pigment, but the mydriasis remained in spite of repeated instillations of eserin, and the field of vision shows the same restriction as before. M. W. F.

### Leukin, a Newcomer Amongst the Serum Bactericides.

DOR, L., Lyons (La leukine, le dernier venu parmi les corps bactéricides du sérum, *La Clinique Ophtalmologique*, Vol. XVI, March, 1910, p. 106), has made some researches with the leukins of R. Schneider (*Archiv f. Ophth.*, January 25th, 1910). Leukins are thermostable, whilst opsonins and alexins are thermounstable, leukins are found in the serum only after their issue from the white corpuscles has been effected by some irritant, whereas opsonins and alexins are normal constituents of the serum. Schneider denies Metchnikoff's assertion that the protoplasmic ferment is found in the blood as a çonsequence of the death of white corpuscles, and asserts that it is a secretion of the polynuclear leucocytes.

The author denies the normal conjuctival and lacrimal secretion all batericidal power; the instillation of zinc sulfate, silver nitrate, or of protargol provokes a secretion of leukins from the white corpuscles, but the antiseptics have disappeared from the conjunctival sacs a long time before this bactericidal action asserts itself. To prove this, two drops of 1% solution silver nitrate are dropped into the eyes of a rabbit, and then the conjunctivæ are flushed with a normal salt solution. Fifteen minutes later the conjunctival secretions are aspirated with a pipette, another portion being aspirated an hour later. These two portions are mixed, put through the centrifuge, and part of the fluid subjected to a temperature of 56 degrees for one-half hour. Blood serum is taken from the same rabbit. To culture tubes containing typhoid bacilli, 0.1 of the different fluids is then added, and the following number of bacilli counted at the end of 3, 7 and 24 hours:

| | No. of bacilli present at the beginning. | 1 hr. later. | 3 hrs. | 7 hrs. | 24 hrs |
|---|---|---|---|---|---|
| 0.1 cc. blood serum | 123 | 29 | 0 | 38 | .... |
| 0.1 cc. heated serum | 120 | 118 | 260 | * | * |
| 0.1 cc. first conj. secretion | 126 | 0 | 0 | 0 | 0 |
| 0.1 cc. first conj. secretion heated | 121 | 0 | 0 | 0 | 0 |
| 0.1 cc. 2d conj. secretion | 116 | 1 | 0 | 0 | 0 |
| 0.45 cc. norm. salt sol | 114 | 96 | 93 | 91 | * |

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* Infinity.

This shows that our object is to provoke the secretion of leukins, a thing which we have been doing empirically for a long time, with the idea that the therapeutic effect was due to the antiseptic properties of the collyria. In this regard it is worth mentioning that dionin, which has no bactericidal action *in vitro*, has bactericidal qualities when instilled into the conjunctival sacs.

Dor then goes on to mention the fixation abscesses produced by the subcutaneous injection of turpentine, according to the method of Fochier, with which brilliant results were obtained in grave cases of septicemia. Fochier acted under the supposition that the microbes were attracted by these abscesses, but to-day we know that these abscesses contain no microbes and are of value during the period of formation only; the moment pus cells are present the abscesses should be evacuated and another one started. The power to produce leukins lies with the white blood corpuscles only, and ceases the moment they are changed into pus cells.

Mikulicz injected a 2% solution of nucleinate of soda under the skin of guinea pigs on whom he had produced a perforating wound of the intestines; these guinea pigs resisted all infection, whereas the controls died. Now Miculicz injects 1 gram of nucleinate of soda subcutaneously before every abdominal operation. Under the influence of this drug the number of leucocytes increases considerably, but no local abscess is produced. Question: Does Bier's method excite the white corpuscles and cause them to secrete leukins?

M. W. F.

### Familiar Chorioretinitis Pigmentosa.

Dor, L., Lyons (Chorio-rétinite pigmentaire familiale, *La Clinique Ophtalmologique,* Vol. XVI, February, 1910, p. 60), gives us a history of a family in which the first, second, third and seventh child were born afflicted with chorioretinitis; the fourth child died at the age of 24, and the fifth, sixth and eighth child escaped the disease. In the affected children the disease began at the age of 30, with hemeralopia and spider-web pigment disturbances; chorioidal plaques followed, and then striæ in the retina, which looked as though they had been made with a brush; adherences of iris to the lens capsule, cataract, and total blindness at the age of 50 was the outcome in all four cases. No history of syphilis or tuberculosis in the family, and mercury and salicylate were without avail; no consanguinity. No similar trouble could be found either in the ascendant or descendant part of the family, but amongst the grandparents' families are a number of sudden deaths from heart disease and other causes. Dor looks upon these cases, which clinically are not typical cases of retinitis pigmentosa, as the outcome of the union between two subnormal individuals. The explanation of the parents is somewhat different, and at first glance seems to have logical merit: In 1880 they moved into a new house with children 1, 2, 3, 4 and 7. Children 5 and 6 were sent to relatives, and 8 was born three years later. The house was very damp, and this is supposed to have been the cause of the eye disease. No. 4 died while doing military service, at the age of 24, before the disease could declare itself, but all those children who were exposed to this dampness contracted the disease. Dor thinks it possible that certain microbes emanating from the dampness may have, through the intestinal tract, been the etiologic factor.

M. W. F.

### The Action of Radium on the Nervous System.

Darier, A., Paris (Action du radium sur le système nerveux, *La Clinique Ophtalmologique*, Vol. XVI, February, 1910, p. 53), claims that he was the first one to note the analgesic action of radium in the case of an epithelioma involving the orbit, and that he reported this action as well as the successful application in a case of orbital neuralgia which had resisted all treatment for six months, and the cure of a recent case of facial paralysis, in 1904. In these cases but weak intensities were used. Since then Raymond and Zimmern have reported some truly remarkable results with the pains of tabetics, and Bongiovanni has had equal results in two cases of facial paralysis with partial degeneration, and in four cases of infraorbital neuralgia. A case of orbital neuralgia with corneal acne, which had already existed three or four years, was entirely cured in fifteen days, and six months later the corneal acne had not returned. Autosuggestion was excluded by using non-active tubes, without results. Darier says that the number of data up to the present is too small to establish any clinical rules.

M. W. F.

### A Queer Case of Idiosyncrasy of the Eye to Cocain and Atropin.

Cauvin, C., Nice (Cas curieux d'idiosyncrasis de l'oeil à la cocaine at à l'atropine, *La Clinique Ophtalmologique*, Vol. XVI, February, 1910, p. 57), extracted a piece of emery from the right cornea of a mechanic, after instilling four drops of 4% cocain solution. The next morning the right cheek was edematous, the conjunctiva chemotic. No pain, temperature, nor itching. Seeing that Cauvin was alarmed the patient tried to reassure him by stating that the same thing had happened to him on three previous occasions after the instillation of cocain; that on the fourth or fifth days an eruption would form on the skin, and that in a week everything would be all right again. The case proceeded exactly according to the patient's prognosis, and ten days later he was at work again. Six months later the patient reappeared with a foreign body in the same cornea. Cauvin instilled cocain without thinking, and the same phenomena were observed as on the previous occasion. Cauvin then resolved to await another opportunity with the patient, which occurred three months later; this time, the same cornea being again involved, he used 2% solution of stovain, and the patient was back at his bench in three days.

Cauvin cites the only similar case which he could find in literature, of intolerance of cocain (and quinine), reported by Moore in the *Journ. A. M. A.*, November 3d, 1906.

Cauvin describes two cases of intolerance of atropin: a woman subject to recurrent iritis, who had always borne the instillations of atropin very well, had chemosis of the conjunctiva, edema of the lids and cheeks, eczematous reddening, and intense itching lasting four days. Three years later she had the same trouble after the instillation of two drops of atropin. A man with detached retina showed the same consequences after two drops of 1% atropin had been used.

All the subjects were people over 50 years of age, and all had repeated attacks of rheumatism, which seems to Cauvin to offer the explanation for these phenomena, inasmuch as in the rheumatic state the metabolism and elimination are defective. M. W. F.

### Oxycephalia with Optic Atrophy.

Terrien (Oxycéphalie avec atrophie optique, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 308), adds one more case to those already observed. The patient had exophthalmus, obstruction to the return flow of the facial veins, and diminished intelligence, all of which symptoms had appeared within two years. The patient is the only one of six children so affected. The atrophy was primary, and there was no other fundal lesion. C. L.

### Circular Traumatic Keratitis.

Bistis, Athens (Kératite traumatique de forme circulaire, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 313), reports the case of a boy who was violently struck on the right eye, followed by an intraocular hemorrhage. One month later there was a circular thickening of the cornea, leaving the periphery clear for about 1½ mm. This gradually began to disappear, especially at the lower part. Other lesions were iritis and iridal atrophy. C. L.

### The Clinical Value of the Surgical Treatment of High Myopia by Removal of the Lens.

BONNEFON, Bordeaux (La valeur clinique du traitement chirurgical de la myope forte par la suppression du crystallin transparent, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 281), states that the removal of the lens is advocated for two reasons, improvement of the sight and checking of the lesions following progressive myopia. The amount of gain in vision does not always correspond to the degree of myopia, since a patient with —22.0 D. is reported, who after operation became emmetropic. Furthermore, statistics show that removal of the lens does not check progressive myopia. There are two absolute contraindications: Low degree of myopia and advanced age of the patient. Even in suitable eyes, there is always the danger of glaucoma, iritis, etc., to say nothing of the difficulty of extracting the transparent lens. A discission is not so bad, though it appears worse. It is much easier and in patients of less than twenty-five years devoid of danger. But the immediate dangers increase with the age of the patient. Among the remote dangers, glaucoma may come on years afterwards. Detachment of the retina has been observed many times, but it has never been proved to be more frequent following the operation than without. It is probably less so. The article concludes with a table of 31 cases, most of which resulted very satisfactorily. C. L.

### Contribution to the Pathogeny of Chorioidal Ruptures.

LAGRANGE, FELIX, Bordeaux (Contribution à la pathogenie des ruptures choroidiennes, *Archives d'Ophtalmologie*, 1910, Vol. XXX, p. 269), reviews the several theories proposed for the explanation of chorioidal rupture and relates the case of a young woman who was struck on her upturned left eye by the falling stick of a skyrocket. The contusion of the ball was in the area between the superior and internal recti muscles. V. = 6/10 with — 0.50 D. There was a traumatic paralysis of the sphincter. External to the macula was a long perpendicular chorioidal rupture. A drawing of the lesion, with a diagram showing the direction of action of the forces is given. He agrees with Arlt that in such ruptures of the chorioid an equator of depression is formed perpendicular to the direction of the applied force, the rupture taking place along this equator. C. L.

### Prognosis of Primary Cancer of the Orbit.

Rollet, Lyon (Prognostic des cancers primitif de l'orbite, *Archives d'Ophtalmologie,* 1910, Vol. XXX, p. 257), states that while important statistics have established the prognosis of malignant tumors of the optic nerve, that of cancer of the retrobulbar soft parts has been passed over in silence by most authors. In 170 operations for tumors of the optic nerve, there were 6 per cent of return when the eye was not enucleated and 14 per cent when it was. The objection to the former method is that there is a subsequent shrinking of the eye, frequently requiring secondary enucleation. However, in a case of fusiform sarcoma, which the author operated, the eye 3½ years later looked normal and had normal movements. This case lends support to those who advocate retention of the bulbus.

On the other hand, sarcomata of the retrobulbar soft parts have a malignancy not inferior to the carcinomata. This applies to the diffuse tumors of the orbit, as the encapsulated have a much better prognosis. The former usually have metastases or return; the latter frequently do not. The author concludes by reporting several cases. C. L.

### Section of the Ciliary Zone or Ciliarotomy. A New Operation for Certain Forms of Glaucoma Which Do Not Yield to Iridectomy.

Abadie, Ch. (Section de la zone ciliaire ou ciliairotomie. Nouvelle opération destinée a combattre certaines formes du glaucome qui resistent a l'iridectomie, *Archives d'Ophtalmologie,* 1910, Vol. XXX, p. 262), believes that glaucoma is frequently caused by irritation of the circular nerve plexus covering the ciliary zone, and that consequently section thereof should have an antiglaucomatous action.

His reasons are, first, that a small iridal incision has as beneficial an action as a large one.

Secondly, the filtration of fluid through the corneal scar is not the cause of the decrease in tension, since glaucoma frequently gets well when the incision is almost corneal, and well closed.

The author relates several cases benefited by this operation, one of which was a case of sympathetic ophthalmia with status glaucomatosus. In spite of enucleation of the exciting eye and all forms of medicinal treatment, vision was reduced to blindness on nasal side and quantitative perception of light on the temporal. Scleral puncture with injection of 1-1000 bichlorid solution gave temporary relief, as did subsequent ones. Ciliarotomy caused almost immediate normal tension, quantitative perception of light appeared on the nasal side, and the vision of the temporal side increased to counting of fingers at some centimeters distance.

The technic of the operation is easy. "With a pair of forceps, a fold of the conjunctiva is lifted up about the middle of the superior external quadrant of the cornea, and is cut with a pair of blunt straight scissors for about 1½ centimeters in the direction of the meridian of the corresponding eye. The upper fold is then detached upwards from the sclera by means of a blunt strabismus scissors, care being taken to free it from its corneoscleral attachment by means of little incisions with the scissors. The same is done for the lower fold, so that a large triangular area of the sclera is laid bare, having its base at the corneoscleral margin and its apex at the end of the conjunctival incision. Two sutures are placed in the folds of conjunctiva, which will be able to draw them together so as to cover the scleral wound, which is about to be made. Then with a fixation forceps, the conjunctiva and episcleral tissue of the lower fold is grasped firmly, so as to hold the eye stationary, and a triangular knife of Richter is introduced exactly at the junction of the cornea and sclera, just behind the insertion of the iris. It is pushed gently forward into the globe, its point directed towards the center and the blade in the direction of the corresponding eye.

On account of its triangular form, its movement towards the center of the eye causes its cutting edge to section the ciliary zone. By a little to-and-fro movement of the knife this incision is increased to 7-8 mm., i. e., about the extent of the plexus nervus ciliaris. The knife is then withdrawn and, contrary to what might be expected, at the most a couple of droplets of vitreous escape by this little fissure. Then by drawing together the two sutures previously placed in the conjunctiva its lips are approximated and the scleral incision is covered."

The author has never observed any untoward results, and the effect in glaucomatous degeneration and absolute glaucoma has been wonderful. The operation is not designed to take the place of iridectomy, which has its distinct indications, but is appropriate for cases where iridectomy is difficult or contraindicated. C. L.

### Treatment of Leucomata of the Cornea by Spraying with Sulphur Water.

Moret, L., Chambéry (Traitement des leucomes de la cornée par les pulvérisations d'eaux sulfureuses, *Archives d'Ophtalmologie*, Vol. XXX, p. 366), uses the Challes water, because it contains the highest percentage of sodium sulphid, which is the most active of these drugs. The duration of each treatment is from three to five minutes, being stopped when the irritation is excessive, or the patient has pain, or there is a blepharospasm. The temperature and degree of the application is governed by varying the distance of the spray from the eye. The percentage of sulphur may be decreased by diluting with ordinary water, and increased by addition of drugs. Sometimes the applications are cold and sometimes hot. The author reports two cases of considerable augmentation in vision, accompanied by a clearing up of the corneal opacities. C. L.

### A New Operation for Distichiasis.

Marquez, Madrid (Nouveau procédé opératoire du distichiasis, *Archives d'Ophtalmologie*, Vol. XXX, 1910, p. 356), has successfully operated four cases by the following method: (1) Two longitudinal incisions into the ciliary margin of the lids, one between the two rows of cilia and the other behind the deviating cilia, between the latter and the conjunctival margin of the lid. (2) Two vertical incisions into the cutaneous surface of the lids joining the two extremities of the marginal incision. (3) Elevation of the flap carrying the anterior, i. e., normal cilia, leaving the supplementary row in its position. (4) Extirpation of the area containing the misplaced cilia. (5) Replacement of the cutaneous flap, suturing if necessary. The author uses a special forceps, which is a modification of Shelton's. The article contains four schematic drawings illustrating the operation. C. L.

### A Case of Pemphigus Cured.

Landolt, E. and F. (Un cas de pemphigus guéri, *Archives d'Ophtalmologie*, Vol. XXX, 1910, p. 337), discuss this disease and report the case of a man of 41, who had suffered for several years with trachoma, as the condition was diagnosed. It was, however, a case of pemphigus, which involved the whole left eye and a portion of the right. The patient refused operation, but later was operated elsewhere by grafting of mucous membrane from the lips, but the operation was unsuccessful. Three years after the onset of the condition the patient had a total symblepharon of the right eye with xerosis corneæ. There was only a slight perception of light. The right eye had an entropion of the lower lid, with a distichiasis of the middle third of the ciliary border. The conjunctiva was of a grayish red color and dry. The sac was shrunken. The cornea was partly opaque, with a diminished visual acuity. The operation consisted of four parts.

(1) Ablation of the diseased conjunctiva of the left eye.

(2) Ablation of the cilia, which were out of the regular row.

(3) Dissection of the conjunctiva of the lower lid, and its excision.

(4) Dissection of a large amount of cutaneous tissue of the upper lid, which externally presented a large pedicle. This flap was applied to the inner bleeding surface of the inferior lid, fastened with sutures, and the wound of the upper lid was closed with sutures. The result was very good for four years, when there was a return of the pemphigus, requiring another plastic, which was successful. Later the other eye was enucleated. C. L.

### Tuberculosis of the Lacrimal Sac.

FAGE (La tuberculose du sac lacrimal, *Archives d'Ophtalmologie*, Vol. XXX, 1910, p. 352) states that this condition may be secondary to lesions in the immediate neighborhood or visceral tuberculosis, or it may be primary. Though the neighboring lymphnodes are usually hard and movable, this is not always true, especially in lupus.

There are three varieties: (1) Those involving the surrounding tissues, but not the sac itself; (2) those localized to the sac; (3) those where lesions of the neighboring bones exist. In the first and second varieties, only an operation will give the correct diagnosis. In the third, there is always a fistulous tract with irregular margins, an adenopathy of the same side and other tuberculous manifestations. C. L.

### Removal of a Piece of the Anterior Capsule in Cataract Extraction.

TERSON (Procédé de choix pour l'arrachement d'un lambeau de la capsule antérieure dans l'extraction de la cataracte, *Archives d'Ophtalmologie*, Vol. XXX, 1910, p. 337) again

advocates the removal of a piece of the anterior lens capsule, claiming that it can be done nine times out of ten, and that it successfully avoids secondary cataract. Total removal of the lens in the capsule is unnecessary, if a large enough piece is removed, and it is much more dangerous. He prefers his own forceps to that of other operators, because it has a curvature corresponding to that of the cornea. He determines the condition of the capsule by instilling atropin, and if normal, at once removes a little piece with the forceps. If there is any thickening he first makes an incision with a cystotome, and then removes a piece of the capsule. C. L.

### Neuralgic Herpes of the Cornea.

Cauvin, Ch., Nice (Herpès neuralgique de la cornée, *Archives d'Ophtalmologie,* Vol. XXX, 1910, p. 359), discusses this rare affection and reports a case. It starts as a supraorbital neuralgia, followed in 24 to 48 hours by a corneal eruption and a simultaneous disappearance of the pain. The eruption disappears in two to four days, but usually reappears. In women the condition usually accompanies the menses. The disease usually disappears, leaving no trace. The treatment is hot compresses, atropin and cocain, with removal of the cause, e. g., rheumatism. The general analgesics will overcome the pain. C. L.

# ABSTRACTS FROM ITALIAN OPHTHALMIC LITERATURE.

BY

V. L. Raia, M. D.,

PROVIDENCE, R. I.

### On the Essence, Technic and Results of Dacryocystorhinostomy.

Toti, A. (*Clinica Oculistica,* April-May, 1910). Since 1904, when the author published the first work on a new process for the cure of chronic inflammation of the lacrimal sac, others in Italy and Germany have performed dacryocystorhinostomy, and all seem to be very enthusiastic about it. Until now the most rational treatment has been extirpation of the sac, the consequence of which, even after the most satisfactory results, is epiphora. As the object of the new operation is principally the drainage of the tears through a new opening in the nasal cavity, this last inconvenience is avoided in most of the cases. To understand well the mechanism of action of the operation, a little anatomy of the lacrimal region is very important. The lacrimal groove is divided in two sections by a vertical suture; the anterior, made by the ascending process of the maxillary bone, in which is seen the anterior crista lacrimalis; and the posterior, made by the os unguis. The anterior section corresponds to the external wall of the nasal cavity, while the other to the middle meatus and anterior part of the middle turbinated bone and sometimes to some cells belonging to the ethmoid. It is easy to understand that an opening in this part of the lacrimal groove from the sac through the bone would not be an ideal one for draining the sac and the tears in the nasal cavity, specially when there are polypi in the middle meatus, or the middle turbinated bone is enlarged. For this reason the attempts made for several centuries to cure dacryocystitis by opening the os unguis have decidedly failed. The merit of our author is to have found the reason of these failures and to have departed entirely from the old method.

The technic of the operation is as follows: After an incision of the soft tissues to the bone is made, as in extirpation of the sac, a piece of the ascending process of the superior maxillary bone is cut away from the anterior lacrimal crista to its posterior margin as far in front and down to the nasal duct as possible. The inner wall of the lacrimal sac is then excised in its entirety and a corresponding part of the mucous membrane of the nasal cavity, so that the margins of both wounds in healing up together establish a communication between the sac and the nasal cavity. The sac in reality disappears and the lacrimal canaliculi open directly in the nasal cavity. If there is an anomaly or alteration in the nose, these must be attended to before our attention is directed to the lacrimal region. Dr. Toti uses always local anesthesia by injecting two or three syringefuls of one cubic centimeter of a 2% solution of novocain, in which 3 or 4 drops of adrenalin sol. 1 to 1000 are dissolved, deep where the incision must be performed, and painting thoroughly the middle meatus with a 20% solution of cocain and adrenalin.

The results of the operation are most encouraging, as the experience of several years has shown. They are ideal when the canaliculi have not been incised or other alterations have not taken place as a consequence of other treatment, the discharge not only disappearing completely after a few days, but the tears taking a new course in the nose, as has been repeatedly proved by Schirmer's test (1% solution of perchloride of iron and the instillations of salicylate of soda, 1%, in the conjunctiva) or the appearance of colored solutions in the nasal cavity, which from the conjunctiva must have passed through the lacrimal canaliculi. Erb, after operating in several cases according to this new process, concludes by saying that dacryocystorhinostomy in the near future will take the place of extirpation of the sac. As we have said, ideal results are obtained if the lacrimal apparatus has not been subjected to previous treatment (sounding, incision of the canaliculi, etc.), under these conditions a perfect drainage of the tears being the result without the least sign of the annoying epiphora. Fortunately for dacryocystorhinostomy at present there is a radical change in the therapeutic methods for dacryocystitis. Kuhnt two years ago condemned the systematic sounding through the canaliculi in epiphora, catarrh and pyorrhea of the sac, of recent origin, the Bowman sounds always producing injuries to the swollen mucous membrane and therefore aggravating the inflammation. Our author agrees with this idea and goes further by denouncing incision of the canaliculi and dilatation of the lacrimal puncta. A more rational treatment would be the simple incision of the anterior wall of the sac under the internal orbicular ligament, with which a required rest could be afforded to the organ sufficient to produce the diminution and disappearance of the swelling of the mucous membrane. In conclusion the treatment in these cases ought to be, first, attention to the nasal cavity, external massage of the sac, incision of the anterior wall of the same with the formation of temporary external lacrimal fistula, through which the stenosis could be attended to in a very gentle way, repetition of the incision of the anterior wall of the sac, if it is required, and lastly dacryocystorhinostomy. One of the most frequent alterations in dacryocystitis, according to the author, is the hyperostosis and osteosclerosis of the lacrimal groove, alterations which often require resection of the ascending process of the superior maxillary bone and anterior portion of os unguis.

V. L. R.

# SOCIETY PROCEEDINGS.

BY

T. B. Holloway, M. D.,

PHILADELPHIA.

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## CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting of May 16, 1910. The President, Dr. W. A. Fisher, in the chair.

### Magnet Operation and Skiagraphs.

Dr. E. F. Snydacker read a paper on this subject and exhibited some illustrative pictures.

Dr. L. R. Ryan of Galesburg recently had had two cases where he felt positive there was a foreign body in the eye, but he was unable to locate it. He had no means of making a skiagraph, but used the magnet without success. A physician in another city made a skiagraph, found and removed the foreign body. In the second case there was so much hemorrhage that it was impossible to locate the body. He followed the expectant plan of treatment for three or four weeks, and after the hemorrhage had been absorbed, a piece of steel was located and removed. In this case the giant magnet was tested before the operation and seemed to be working properly, but during the operation it failed. He found subsequently that one of the connecting wires had burned out. The foreign body was located in the upper and anterior portion of the retina, and it was drawn down to the lower and outer quadrant, where an incision was made and the foreign body extracted.

Dr. C. H. Beard thought that one point was exceptionally well taken, and that was, that we are too apt to despair of saving some of these eyes, and to illustrate this point cited the following history: A man was punching a boiler plate with a punch of a diameter of five-eighths of an inch. It was poorly set in the machine, and nearly half of the face of the punch broke off, penetrated the upper lid, making an enormous opening as it entered the globe. The steel was removed with the giant magnet nearly a year ago. The man has a satisfactory eyeball of normal tension, but no vision. The eye is quiet and the globe is of good shape and form.

Dr. Henry Gradle felt that the conclusions of Dr. Snydacker would be concurred in by all surgeons of experience. He had had a few experiences which do not come within the range of the paper, but were interesting in this connection. One of the cases illustrates the possibility of a small piece of iron remaining in the eye and ultimately disappearing by complete absorption, without causing siderosis. Toward the end of the seventies a man received a small chip in the eye, which entered the lens. The patient was seen a few days afterwards, and there was no reaction, and as knowledge of the magnet extraction was limited, Dr. Gradle concluded to do nothing. The object was absorbed. The eye was quiet many years. Fifteen years later the man had sudden occlusion of the macular arteries of the other eye, making him totally blind for a time. There was a large central scotoma, and a cataract was present in the injured eye. A discission of the secondary cataract was performed and almost normal vision obtained for the primarily injured eye. No siderosis was demonstrated, nor could any foreign body be located with the ophthalmoscope. The small piece of iron in the lens had become completely absorbed. Recently another instance was met with where a small piece of iron remained in the eye about twenty years and escaped detection. It became absorbed, but caused considerable damage, perhaps directly, perhaps indirectly. The man complained of rather poor sight and some discomfort. Examination suggested a simple glaucoma, not very well pronounced. Excavation was not complete. The hardness was doubtful to the finger, but the pupil did not react. The iris appeared somewhat atrophic. The entrance wound of the small piece of iron could be demonstrated in the cornea, and a corresponding rent in the iris near the periphery was seen. On looking obliquely into the eye under mydriasis a small piece of iron surrounded by a cloud-like mass in the chorioid could be observed. There was no siderosis. Vision was reduced, and the field of vision was suggestive of a simple glaucoma. The skiagraph showed nothing. The piece of iron or steel has been absorbed and the man is suffering from simple glaucoma following the lodgment of a foreign body in the chorioid about twenty years ago.

Another patient was one whom Dr. Wood had seen and a case in which Dr. Gradle was associated with Dr. Pinckard. A young man had his glasses broken, and it was assumed that a large piece of the glass got into the eye. After a day or two of irritation the eye became perfectly quiet. Dr. Pinckard saw him two weeks before, and the eye was free from irritation, the pupil dilated freely under atropin. Vision was far from normal. In the eye there were recurrent retinal hemorrhages every day or two. The vitreous was clear, but there was something that looked suspicious of a foreign body. The skiagraph showed a very sharp outline of a somewhat comma-shaped object, not over one-quarter inch in height, and one or two millimeters in width.

After a few days we came to the conclusion that if a foreign body could not be excluded, the eye was too dangerous to remain, although it was free from inflammation. We opened the eye, went in with forceps, but did not succeed in finding anything. The eye was then enucleated, and on opening it we found that about one-third of an ordinary spectacle glass was standing vertically in the vitreous in such a manner that the X-ray had taken a profile view, showing it as a comma-shaped object. The glass was fully more than one-half inch in length.

Dr. Snydacker, in closing, said that he had examined many pieces of steel under very high magnifying glasses. Removing a piece of steel is not a simple piece of work, because the steel is covered with little barbs. Sometimes it is studded with fish-hook-like projections, which attach themselves to the surrounding tissues when removing the object. He had read of many descriptions of drawing the foreign body forward through the small incision, but he has never been able to do that, especially when the steel had become encapsulated. Dr. Snydacker thought it was better not to withdraw the foreign body through the original opening. It depends entirely on the location of the body and the possibility of injuring the lens and ciliary processes during the withdrawal. It is better to draw the body into position, where an incision can be made safely, and the object withdrawn. A skiagraph should be taken in every case, regardless of the fact that the object has been located with the ophthalmoscope.

### Reports as to the Condition of the Cataract Cases Operated on by Dr. Greene.

Dr. William A. Fisher reported that his case had done nicely in every way and that the patient's vision was 20/20 with a plus 10 D.

Dr. John R. Hoffman also reported on a case that Dr. Greene had operated on.

Dr. Willis O. Nance reported that in his case there had been considerable reaction following the operation, and the healing of the corneal wound was slow. The eye was still red, although there is no indication, nor has there been, of iritis. The pupil is large and elliptical in form. There is a distinct membrane, probably the remains of the zonule, covering fully two-thirds of the pupillary space and corneal striæ are visible. Vision is 20/120, and there is no improvement with glasses.

Dr. Nance had the eye dressed forty-eight hours after the operation, believing that it is positively unsafe to leave an eye operated on for cataract unnoticed for six or seven days, as advised by some operators.

Dr. Clark W. Hawley reported on two cases, in which, except for some complications incident to meddlesomeness on the part of the patient, the progress had been very satisfactory. In one case, that of an old lady, vision is about 20/40. With a plus 4 or 5 D. lens she reads newspaper print. The interior of the eye is clear. The second patient, a man, has 6/36 vision, and his eye is clear.

Dr. H. W. Woodruff reported that his patient had had an injury, a piece of wood striking the eye eight years ago. The pupil was eccentric, and could not be dilated. The other eye was myopic and the seat of a diffuse chorioiditis. At the time of operation a slight amount of vitreous was lost. The eye was tested rather frequently and the wound healed slowly. The anterior chamber did not ré-form for some time. The lips of the wound did not approximate well, so that at the present time there is a high degree of astigmatism. There is 20/30 vision with a plus 6 D. sphere, combined with a plus 6 cylinder.

Dr. W. H. Wilder reported that his patient had passed through the operation satisfactorily, the wound healed well, and there is 20/50 vision, but a high degree of astigmatism, 8 D., axis 45°. There was a great deal of redness for a considerable time after the operation. There is not, he said, the tendency to iritis or iridocyclitis in the Smith operation that there is in the ordinary operation, and therefore he did not understand the condition present in his case.

Dr. Oscar Dodd said that his patient was eighty-one years old, and not in good health. The operation was successful; the bandage was changed on the ninth day, and the eye was then in good condition. The wound had apparently healed. Forty-eight hours later the eye was irritated and the wound was leaking. The eye quieted down for a few days. The only complications that occurred were that the lips of the angle of the iris became adherent to the wound, pulling it up and making the pupil elliptical. There was a large amount of astigmatism, from 12 to 15 D. Vision was 20/200, with an 8 D. cylinder, but at the present time it is 20/100, with a plus 5 D. sphere combined with a plus 10 cylinder. The media are perfectly clear.

Dr. E. V. L. Brown stated that he had seen about sixty patients in Dayton on whom Dr. Greene had operated, but that in his opinion the results were not as good as those obtained with the ordinary cataract operation.

Dr. D. W. Greene said that these cases are in every way absolutely different from those of the old operation. Some of the things reported to-night as adverse criticism will eventually turn out all right. He had now had about 600 of these cases, and many of the conditions referred to to-night have happened, but they have all turned out better than one would expect. He has not had these things happen in any considerable degree, and that is probably because of the fact that an operator is seriously handicapped when he operates away from his own operating rooms.

In regard to Dr. Nance's case, Dr. Greene had seen the condition he described. The lens came out perfectly in the capsule; the membrane in the pupil can only be some remnant of the suspensory ligament. Dr. Greene's judgment is that the weakest point about the whole Smith operation is the large section that is necessary to get the lens out. All the trouble encountered relates to the section of the Smith cataract operation, and the section will determine the amount of astigmatism. If one succeeds in getting a straight section, a high degree of astigmatism will not result. If primary union is secured a low degree of astigmatism will follow, but if delayed healing supervenes, the astigmatism is high, but it gradually becomes less, as is shown in Dr. Dodd's case, where it was reduced from 12 to 15 to 5 D. Myopes are bad subjects, as a rule, because of the low tension of the eye.

If normal tension is present there will be no trouble. If the tension is low, trouble will result. The section made suits the operation, which is an upsetting of the lens. If a circular marginal section is made to upset by pressure below, the upper quadrant of the lens will be constantly in front of the section. Major Smith makes a corneal section and gets more astigmatism than when the peripheral section is made. But the corneal section has many advantages. There is no cystoid healing.

You must remember that meddlesome treatment of cataract wounds is bad practice. Dr. Greene had the misfortune of seeing a total suppuration of the globe, but what good would it have done to have seen that infection on the second day, because the globe is hopelessly lost, no matter when the suppuration is discovered? In Dr. Dodd's case the wound was leaking; the section involved the upper third of the cornea. The three millimeters section will heal much quicker and better than the large section made in extractions within the capsule. The size of the section is the weakest point of the operation. The lens cannot be extracted without rupture of the capsule unless a large section is made. If the capsule is ruptured the ordinary capsulotomy operation has been done. Dr. Greene has not seen many cases in which there were iris entanglement. Dr. Brown, Dr. de Schweinitz, and Dr. Standish saw about sixty of his cases, and there were only two cases of iris entanglement among the number. That is as good as can be done with the old operation. The pupil is drawn up in many of these cases; in fact, a high pupil is the rule. The doctor suggested to Major Smith that he make the iridectomy from below instead of from the side, as he was in the habit of doing. He has now adopted this plan.

Dr. Greene has seen the black spots mentioned. That is nothing but pigment from the posterior surface of the iris. The reaction in these cases is more severe than in the ordinary operation, but if they are watched it will be seen that while there is redness, there is no pain. The redness is more of an irritation than an inflammation. It is a trauma and not an infection which is really to be expected in this operation.

One advantage of the operation is the fact that an immature cataract can be removed easily and quickly. In removing the lens the pressure on the cornea must be at a point opposite the lower border of the lens. This tears the suspensory ligament, and the intraocular pressure forces the lower edge of the lens upward and forward toward the corneal incision. It pops out and is held only by the zonule. The lens comes away clean, without any shreds hanging to it. There is no escape of vitreous, because as soon as the lens pops out the lips of the corneal wound meet. It is important to keep the hook away from the capsule or it will rupture.

Dr. Faith asked if in the combined extraction it is not uncommon for two raw surfaces to adhere and to have entanglements of the iris to the posterior surface of the cornea? Dr. Ware used to do a preliminary iridectomy on all cataract cases and there was never any entanglement of the iris. The iris healed quickly, and there were not two raw surfaces to come together, as in the combined extraction.

Dr. Snydacker said that it seemed to him that in the cases reported to-night the average visual acuity was not very great. Is that usual in these cases?

Dr. Greene said he believed in preliminary iridectomy. If this was done in every case we would have greater success. Of course, the eyeball is opened twice, and few patients will consent to two operations, which is the point to be considered.

As to the visual acuity, the results reported to-night are by no means typical. Last year Dr. Greene reported seventy-five cases at the meeting of the American Medical Association, and in most of the cases Drs. Wood and Jackson found better vision than was reported. These cases are being judged at the end of thirty days. Practically all the conditions seen immediately after the operation disappear within a very short time. By delivering the lens by the Smith operation there is in certain cases an attachment between the posterior capsule and the anterior layers of the hyaloid. Where you do not open the capsule you do not have the iritis that you have when you open the capsule.

WILLIS O. NANCE, Secretary.

# OPHTHALMIC SECTION.

## ST. LOUIS MEDICAL SOCIETY.

Meeting of April 6th, 1910. Dr. F. L. Henderson, presiding.

### Epithelioma of Eye.

Dr. R. F. Miller presented a patient who was first seen by him last Friday morning. He was born in Germany and has lived in this country twenty-six years and most of the time has been employed at railroad work. More than three years ago, during a freeze, he was working with a pick when some water and sand struck him in the eye. Within ten days the eye became inflamed. He was treated by a traveling physician, and subsequently the inflammation tended to recur with intermissions. He then consulted a traveling oculist, who is supposed to have removed some particles of sand from the eye. Then this growth developed. Later he went to Springfield, Missouri, where an oculist desired to remove the eye, but this being refused, the doctor removed the tumor from the conjunctiva. The patient states that seven months ago the tumor was larger than at the present time. The epithelioma on the temporal region developed very soon after the inflammation of the eye, and one attempt towards the removal of this growth by surgical procedures had been followed by recurrence. The pathologist of the Frisco Hospital examined a portion of the growth from the eye and stated that it was "a carcinoma of the squamous type"—an epithelioma. To-morrow I expect to enucleate the eye and remove the epithelioma from the temporal region. The question comes up as to what after-treatment should be employed; whether it should be cauterized or treated with the X-ray. The man is in perfect health otherwise and has gained flesh this winter. He states that a year ago last July the tumor was as large as it is to-day. It has been suggested that the patient have the X-ray treatment before removal, but owing to unfortunate domestic conditions, any long continued treatment is impossible.

*Discussion.*—Dr. Clarence Loeb had seen two cases of epithelioma of the eyeball, but this was the largest he had ever seen, and he did not believe that any operation would avail except a complete exenteration of the orbit. The reddening of the lid made him think there might be some cancerous tissue in the lid itself, and, therefore, after the operation he thought the patient should be subjected to the X-ray in order to destroy completely any cancer cells that might remain.

Dr. Meyer Wiener had seen a similar case at the Washington University clinic last spring. After removal of the entire orbital contents there had been no return, and the skin had grown up into the orbit. It seemed to him that that would be the only safe way to deal with such a case, for cases of carcinoma of the orbit are very treacherous. He had recently had a case of epithelioma of the lower lid, a photograph of which he presented to the section.

Dr. Henderson believed that the safest procedure was to remove everything but the skin of the lids, dissecting right down to the bone. He thought that subsequent X-ray treatment would be advisable.

### Total Double Ophthalmoplegia, Associated With Simple Glaucoma.

Dr. J. Ellis Jennings stated that he was reporting this case of total double ophthalmoplegia on account of its rarity and because it was complicated by simple chronic glaucoma and total blindness.

Mr. T. O., aged 75, consulted me February 8, 1910. The patient is a retired farmer, who raised a large family of healthy children, and had enjoyed good health until his eyes became affected ten years ago. The first symptom noticed was ptosis of the left upper lid followed later by ptosis of the right lid, and then a gradual loss of power of all the ocular muscles. Two or three years ago vision began to fail until sight was lost in both eyes.

*Examination.*—There is complete double ptosis. When the lids are elevated by the fingers, the eyeballs are seen to be absolutely fixed, staring directly forward, and cannot be moved a particle in any direction. The cornea of the right eye is hazy, the anterior chamber shallow, and the pupil a large oval. The lens seems clear, but a view of the fundus cannot be obtained owing to the hazy media. T. + 1½ or 2. The condition of the left eye is the same plus a complete opacity of the lens. T. + 1½ or 2. There is no light perception in either eye. I made the diagnosis of simple chronic glaucoma, as after careful questioning I could obtain no history of inflammation or pain in the eyes at any time. The urine is negative. There is no evidence of syphilis except one of the symptoms of tabes, i. e., an absence of knee jerks.

Total ophthalmoplegia, or paralysis of all the orbital muscles supplied by the third, fourth and sixth nerves, may be acute or chronic. In acute cases the paralysis comes on rapidly and is frequently accompanied by fever and convulsions and may prove fatal. The causes given, according to de Schweinitz, are hemorrhage in the region of the nuclei or an acute hemorrhagic encephalitis, the primary cause being syphilis, tuberculosis, ptomaine-toxemia or poisoning from alcohol or sulphuric acid.

In the chronic form one or more muscles may be affected at first and gradually increase until every muscle is paralyzed. The causes given are syphilis and tuberculosis resulting in hemorrhage or degeneration of the nuclei or nerve trunks.

*Discussion.*—Dr. F. L. Henderson wished to know whether Dr. Jennings considered the ophthalmoplegia and simple glaucoma coincidental or in any way dependent upon each other. He thought it would be interesting to know if there was any association between the ophthalmoplegia and the glaucoma.

Dr. Jennings said he thought the association was a coincidence.

Dr. Wiener said that through the courtesy of Dr. Jennings he and Dr. Wolfner had seen this case, and it certainly was very puzzling. The patient had been questioned very closely, but it was hard to get a definite history as to which condition had appeared first; but the fact remained that there was an increase in tension in both eyes.

Dr. Jennings said that we do not know the cause of simple glaucoma, and the combination, as in this case, was so rare that it would be impossible to make any deductions. In fact, we do not know certainly the cause of the ophthalmoplegia, or the character of the lesion. The man was in robust health and there was no evidence of any mental or physical disease, muscular or progressive paralysis. In fact, he was a perfectly healthy, normal individual, except that he was absolutely blind. He had a number of healthy children, and had never been sick until this condition appeared at sixty-five years of age. He regretted that this man had disappeared from observation before he had an opportunity to study the case as he would have liked to do.

### A Modification of the Scissors Operation on the Lower Punctum.

Dr. J. W. Charles. The principal points of the paper were that the old knife operation of slitting the canaliculus into the lacrimal sac was unsatisfactory because it not only destroyed the pumping power of the canaliculus, but when the conjunctiva was swollen as in beginning ectropion the incision could not be so accurately placed as to ensure its lying toward the globe after the swelling had subsided, and it therefore often lay in the skin, and became a dust-catcher.

Some years ago, Dr. John Green began to use his scissors operation. This was made by inserting one blade of the scissors into the canaliculus and then turning the other blade outward until it lay upon the conjunctiva temporally to the former. The resulting incision was vertical to the lid-margin. Because this shrinking required some time and the flap acted as a valve, in many instances, and prevented immediate relief of the stillicidium, I have for some time made a rather larger flap than that of Dr. Green by pressing the conjunctiva upward into the bite of the scissors and extending the incision backward toward the cul-de-sac. This leaves a rather angular incision and the principal addition to Dr. Green's operation lies in the fact that the flap is then cut off by a vertical snip of the scissors, leaving a triangular depression which acts as an artificial lacus lacrimalis in the palpebral conjunctiva almost immediately after the operation. The wound is of course kept open by stretching with a probe until the depression is covered with epithelium. The advantages are the almost immediaet relief, the retaining of normal pumping power, the final retention of as nearly normal relations as possible, since the new punctum remains in contact with the globe and its greater applicability in cases of beginning ectropion.

The method differs entirely from the discarded Critchett operation, which consisted in slitting the canaliculus into the sac and removing a large triangular flap with this incision as a base. It resulted in deformity.

*Discussion.*—Dr. F. L. Henderson had seen two cases operated upon by Dr. Charles, and both seemed very successful. He believed that in one case Dr. Charles did a straight scissors operation on one eye, had taken out a little triangular piece in the other eye. The snipping out of a small piece of the mucous membrane left a very satisfactory opening. He understood Dr. Charles' position to be that he thought in the majority of cases it gave a more immediate, tangible result than the straight scissors operation.

Dr. Meyer Wiener asked Dr. Charles if he noticed a marked difference in the carrying away of the tears after this operation. It had always seemed to him that it depended not so much upon the size of the opening as upon the two puncta coming together. He had seen cases where the lower punctum was slit and it was a perfectly good canal, and yet there was an overflow of tears on the cheek. If there was not a marked difference in the tears in this case it would overthrow his theory.

Dr. Charles said that he had noticed an immediate difference in the carrying off of the tears. This was especially true in beginning ectropion. Almost all of those cases responded instantly when the punctum was extended backward toward the fornix. He thought it was just in those cases that this modified operation had its best effect, where the punctum had been turned out so far that the tears could not flow away. The patient almost invariably returned the next day with the statement that there were no more tears.

Dr. Wiener asked if the upper punctum came directly over the lower opening.

Dr. Charles said that he had not noticed that point at all, but he did know that with the ordinary slit he had seen many cases that were not remedied. With this operation, however, by pushing back the punctum toward the cul-de-sac, the tears had subsided. He had not noticed whether the upper and lower puncta came in contact, but would keep Dr. Wiener's observation in mind in his next cases.

Meeting of June 1, 1910. Dr. F. L. Henderson, presiding.

### A Giant Magnet, New Design; Removal of Very Small Fragments From the Lens.

Dr. W. H. Luedde. The removal of all metallic fragments from the interior of the eye is much simplified by the recent development in X-ray localization. For fragments of iron and steel corroborative evidence may be obtained by means of the sideroscope.

Careful work with the X-ray may give more accurate localization, but the sideroscope gives an approximate idea of the mass.

Extraction of the foreign body from the eye cannot, in every case, result in saving a good eye. By the very nature of the injury the destruction of tissue, and the resulting inflammation, often makes enucleation necessary, even when the foreign body has been successfully removed.

A very small fragment causing only a slight perforation may carry infection into the interior of the eye, resulting in ultimate destruction.

*Electro-magnets.*—The use of the ordinary bar of magnetic iron was recommended two thousand years ago in the Agur-Veda of Sucruta. The modern electro-magnet is divided into two general classes, the hand magnet (Hirschberg) and the giant magnet (Haab). The former has relatively little attractive power except in immediate proximity to its tip, whereas the latter may be used to dislodge and bring forward particles imbedded at the opposite pole of the eye.

The use of the small magnet often requires the introduction and manipulation of its tip in the eye, with corresponding damage to the vitreous and other tissues and the increased possibility of infection.

The giant magnet makes possible the extraction by bringing the tip of the magnet to the original wound or to an incision made at the most desirable location, and drawing the fragment to it.

*Methods of Extraction.*—The simple exposure of the injured eye to the force of a magnet is rarely sufficient to extract the fragment. The procedure must be based on the consideration of the size and location of the foreign body, the location of the original wound, and the time that has elapsed since the injury. Although in certain cases, seen early, the extraction through the original wound is practicable, especially with the giant magnet, without waiting for X-ray localization, as a rule the latter is a great help in planning an extraction.

The new giant magnet herein presented, is of superior force, having shown greater attractive power in two cases previously exposed to other giant magnets. It was so constructed as to gain the greater power necessary in these operations. It is so mounted that it can be brought up to the operating table and adjusted to various heights. A variety of removable tips permits adjustment from the least to the fullest power.

Operations requiring the opening of the eyeball should be done with as great care as laparotomies, because the iris, ciliary body, chorioid and vitreous are as liable to infection as the peritoneum. For that reason operations with the magnet should be done in a good hospital operating room with all proper precautions.

The installation at St. Luke's Hospital, which has its own electric plant and direct current, is entirely satisfactory.

Case reports included: Three of larger fragments with much injury and infection—extraction successful—eyes lost in each case through general uveitis; two cases of steel fragment in the lens producing cataract—successful extraction by giant magnet (one fragment of barely one milligram in weight extracted two weeks after injury). Cataract operation followed by perfect vision (16/15 with glasses) in each case.

*Discussion.*—Dr. N. M. Semple said that the case referred to by Dr. Luedde gave a good illustration of the power of his magnet. A man reported to Dr. Semple on the 12th day of January of this year, after having received a wound from a piece of iron from the end of a hammer, while hammering on an automobile. There was a small wound near the inner limbus, and at that time there was very little ciliary injection, and that local. The vitreous was still clear, so that it was possible to locate a wound near the posterior pole of the eye, about four millimeters to the temporal side of the macula. The skiagraph showed the piece of steel embedded in the sclera at this point. Dr. Semple had tried to extract the fragment immediately, the patient having come to him about two hours after the occurrence of the accident. This was attempted with Dr. Charles' magnet, but was unsuccessful. The next day Dr. Semple used the magnet demonstrated by Dr. Luedde, and, as stated by Dr. Luedde in his paper, the piece of steel was dislodged from the sclera and brought to the tip of the magnet, being withdrawn at the lower temporal side of the globe. The interesting feature to Dr. Semple was the fact that this magnet was strong enough to dislodge a piece of steel that had been deeply embedded in the posterior wall of the eye. The amount of damage which had been done by this manipulation was very little. There had been no hemorrhage of any kind into the vitreous, and there had been only a slight, local hemorrhage at the site of the operation. The vitreous, for the first few days, was clear, but at the end of the fourth day infection began, and resulted in a very severe panophthalmitis. It was unfortunate that the infection could not have been avoided. It would probably have been impossible to have extracted the fragment without a magnet of this strength. Dr. Semple, however, had not had enough experience to say whether it would have been better to have drawn such a fragment through the lens into the chamber, but he thought the injury would have been greater if an attempt had been made to take it out by the latter route. He had had some experience with vaccine therapy, and had used it rather energetically in this case (i. e., the staphylococcus vaccine), and an improvement was the result. Within the first forty-eight hours there was an increase of the symptoms followed by a decided improvement. The case had progressed slowly, resulting eventually in a shrinking of the eyeball from chronic uveitis. It was Dr. Semple's impression that they had, in this strong magnet, something that would enable one to get better results than they had had heretofore, especially in those cases where the steel was embedded deeply in the sclera, near the posterior pole of the eyeball. Such a magnet as that of Dr. Luedde would enable one to dislodge a piece of steel which could not be budged by a magnet of weaker power and shorter pulling range.

Dr. J. H. Gross was very much pleased to know that they had a very strong magnet in St. Louis. He had always felt a little uneasy regarding cases with pieces of steel in the eye, because he had never known exactly where he would find a suitable magnet. When he read the announcement of Dr. Luedde's paper Dr. Gross had hoped that possibly a new idea in magnets had been carried out. In 1905 there had been published in the *Zeitschrift für Augenheilkunde* an article on magnets, coming from the University of Basel, or Bâle, in which they had been experimenting with a new magnet. The magnets that had been used before this had all been patterned on the plan which had been followed out in Dr. Luedde's magnet. This magnet, however, was somewhat different, the coil being arranged in a circular manner. The core was movable, it really required no fixed iron core; any piece of soft iron could be introduced, if necessary, and the magnet could also be used without the core, by simply putting the patient's head within the magnet itself. With the assistance of Herr Klingelfuss, who was probably an expert mechanic, this magnet was constructed. They had been experimenting with this magnet for some time before this article was published. Since that time the magnet had been used, and only within the last year or so there had been another report on the use of this magnet with cases, which emanated from the clinic of Basel. Dr. Gross had brought the book with him, it was well illustrated, and he would be glad to have the doctors look at it, for the illustrations would tell them more than he could tell them in many words.

Dr. Clarence Loeb said that in the *Archives d'Ophtalmologie*, 1909, p. 193, Mellinger had described a magnet something on the order of the one spoken of by Dr. Gross, and had spoken of it very favorably. The magnet created a magnetic field within the circle of the wire, and any metallic body introduced in that field became magnetized. Mellinger in describing his method stated that he put the patient's head within the circle, and then took a pencil or bar of iron and moved it around within that field. Of course, this magnet had an advantage over the stationary magnets. The strength of the magnet was dependent upon the amount of electricity that could be sent through this coil and the size of the bar of metal that was used in extracting. It seemed to Dr. Loeb that this magnet was much simpler, and was certainly less expensive than those magnets built on the old style.

Dr. Loeb said that one of the advantages of the magnet to which he had referred was that one could use an ordinary knife, after making the corneal incision, as the magnetizing body to attract the fragment.

Dr. Luedde, in closing, said that the point brought out by Dr. Gross was interesting. It must be remembered that any electro-magnet would magnetize any piece of iron or steel that came within its field, and that the piece is brought toward the tip of the magnet. If that piece of iron happened to be very small, the direction of its pull would be true, but the amount of its pull would be less, i. e., the force with which it is pulled depends upon the strength of the magnet, and its own mass, and the distance between the two. This magnet was so constructed that either a 500-volt or 110-volt could be used.

Dr. Wiener had stated that he had never had the same amount of force from his magnet since he had used the 110-volt. Dr. Luedde recalled a similar experience. Dr. Luedde stated that one reason for installing the magnet in St. Luke's Hospital was that they had their own electric plant and a direct current. Dr. Luedde believed that a powerful magnet was the only thing, at times, which did the work, and if one had a powerful magnet it was easy enough to increase the distance from the eye so that one could reduce the pull as much as desired.

J. F. Shoemaker,
Section Editor.

# BOOK REVIEWS.

### An International System of Ophthalmic Practice.

Edited by Walter L. Pyle, A. M., M. D. Therapeutics:—By Dr. A. Darier, Paris. Translated by Sydney Stephenson, M. B., F. R. C. S., London. P. Blakiston's Son & Company, Philadelphia, 1910. Price, $4.00.

In this, the first volume of the *International System of Ophthalmic Practice* to appear, Dr. Darier has covered the subject in a complete and masterly manner. All of the methods and remedies pertaining to therapeutics, including the most recent advances in this branch of ophthalmology, have received the author's careful attention, and his direct and instructive manner of imparting his knowledge have resulted in a book of superior merit.

Those who are familiar with his previous work on *Ocular Therapeutics* will not be surprised at his enthusiasm and unbounded confidence in certain remedies which have satisfied him, both experimentally and clinically. It is, moreover, a satisfaction to the reader to know that Darier's conclusions have been reached only after the most careful analyses obtainable from the laboratory and the clinic.

The present volume contains some four hundred pages, and is well indexed. The first part describes the various methods of diagnosis, and covers constitutional treatment, extraoral medication, intraocular and subconjunctival injections, serumtherapy, phototherapy, electrotherapy, X-ray and radium, hydrotherapy and mechanotherapy, local medication, mydriatics, cycloplegics, miotics and, in fact, all means and methods of meeting the indications exhibited in the practice of ophthalmology.

The second part deals with special therapeutics as applicable to the individual diseases of the eye.

Throughout the author has been very systematic, and Mr. Stephenson has been successful in producing a text that is smoothly readable, and that has not suffered by translation.

We congratulate the Editor upon the excellence and value of the first volume of his system, and trust that the remaining volumes will soon make their appearance. Such a system as is promised, if it meet in its entirety the standard set by Dr. Darier's Therapeutics, deserves a place on our shelves accessible for frequent consultation.

William T. Shoemaker.

### Nursing in Diseases of the Eye, Ear, Nose and Throat.

By the Committee on Nurses of the Manhattan Eye, Ear, Nose and Throat Hospital. W. B. Saunders Company, Philadelphia and London, 1910. Price, $1.50.

This little book of two hundred and eighty pages has been prepared by Doctors J. Edward Giles, Arthur B. Duel, Harmon Smith, John B. Shannon, John R. Page, Herbert B. Wilcox and Miss Eugenia D. Ayres, Superintendent of Nurses.

While the authors declare that the book is intended for nurses and not for physicians, the reviewer is of the opinion that both nurses and physicians should be familiar with its contents and will find in it information and instruction of the most valuable and practical character. The nurse's training is largely in the hands of the physician, and the willing and enthusiastic student of nursing is only too often handicapped by the physician's ignorance or lack of interest in not only the principles but in the practice of nursing. If the physician cannot recognize good and efficient nursing he is not apt to secure it for his patients.

The book seems to solve a problem which the authors especially mention and which is well known to anyone who has had experience in the training of nurses. The preliminary education of nurses varies so much, that in a class, what would be elementary for some, would be advanced for others, or impossible of comprehension for still others. Skilful writing and arrangement have met the needs of all.

Among the chapters in the general part of the book are those treating of antiseptics, disinfection, sterilization, preparation of operating room, the nurse's duties at operations and in emergencies, the management of troublesome children, and the feeding and care of infants.

The special portions have to do with the eye, the ear, the nose, and the pharynx and larynx.

A brief but excellent chapter on anatomy and physiology commences each of the special sections. We consider the book one of the best and most useful yet published on the subject of special nursing and predict for it many warm friends among trained nurses and "trained" physicians.

William T. Shoemaker.

## NEWS AND NOTES.

The Philadelphia Polyclinic has been thoroughly reorganized and put upon an entirely new basis. The teaching will be resumed at the usual time in the Fall, with better facilities than ever. Two courses of study have been arranged for those interested in kindred specialties, one course on the eye, ear, nose and throat, in which every hour from nine to twelve and from one to six, will be occupied either in clinical work or teaching. In addition to this there will be a special eye course fully occupying the hours just mentioned.

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Mr. Sydney Stephenson, of London, England, was the guest this year of the American Academy of Ophthalmology and Oto-Laryngology. At the fifteenth annual meeting, held in Cincinnati, September 19, 20, 21, Mr. Stephenson read a paper on "Sloughing of the Cornea in Infants, With a Report of Thirty Cases." While in Philadelphia he was the guest of Dr. Wendell Reber, President of the Academy.

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Dr. H. G. Langworthy, of Dubuque, Iowa, is building a private Infirmary for Eye, Ear, Nose, Throat and Oral Surgery, on the southeast corner of Tenth and Bluff streets.

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